FDL-390BE

SERVICE MANUAL

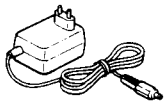
AEP Model
UK Model
E Model

SPECIFICATIONS

TV standard	CCIR TV standard British TV standard
Colour system	PAL
Channel coverage	CCIR: VHF E2-E12 CCIR: UHF E21-E68 UK: UHF E21-E68
Antenna	VHF/UHF telescopic antenna
Display	TN LCD/TFT active matrix method Total picture-element number: 89,505 Effective picture-element ratio: more than 99.99%
Picture size	3-inch picture measured diagonally
Speaker	77 mm (3 inches) dia.
Input	EXT ANT: minijack, impedance 75 ohms AUDIO/VIDEO IN: tripolar minijack, Impedance Audio 47 kilohms/Video 75 ohms
Output	EAR: minijack, impedance 8-300 ohms
Power requirement	9 V DC, See page 3 "Power sources".
Battery life	See page 3 "Power sources".
Power consumption	5.8 W (9 V DC)
Dimensions	Approx. 208 × 116.5 × 72.5 mm (w/h/d) ($8^{1}/_{4} \times 4^{5}/_{8} \times 2^{7}/_{8}$ inches) incl. projecting parts
Weight	Approx. 1.1 kg (2 lb 7oz) incl. batteries.

Supplied accessory (except for the UK model)

AC power adaptor (1)



Design and specifications are subject to change without notice.

FEATURES

- The LCD (Liquid Crystal Display) provides clear pictures and natural facial colour tones.
- This unit receives either CCIR (VHF/UHF) or British PAL (UHF) TV system.
- This unit is used as an AV (audio/video) monitor.
- The TV signal booster amplifies the radio waves and improves receiving.
- This unit has a powerful sound output of 500mW.
- The voltage synthesizer tuning system allows easy tuning.
- Provides 8 hours of continuous operation using the six LR14 (size C) alkaline batteries.
- An angle-adjustable stand is provided.

MICROFILM

MC-Service

LCD COLOUR TV

SONY®

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MODEL IDENTIFICATION

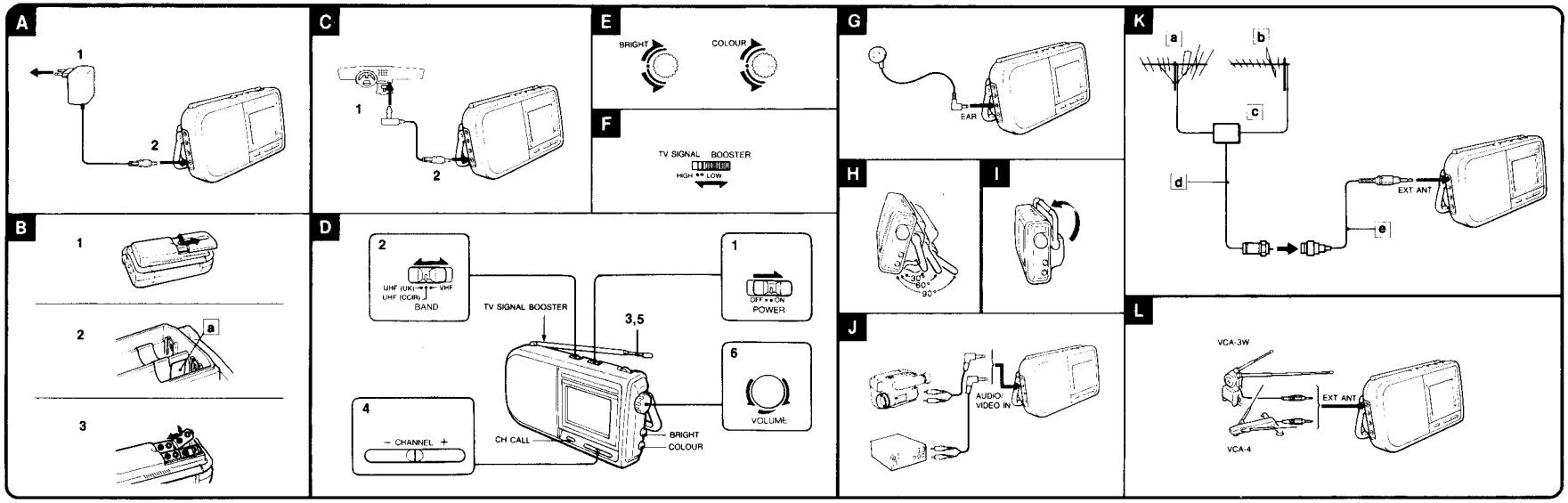
— Model Number Label —

• AEP, UK, E model: 4-032-249-01

SONY® MODEL NO. FDL-390BE
LCD COLOUR TV
DC 9V ⎓ (AVERAGE) 5.8W
BATTERY SUPPLY: 1.5V×6 LR14 SIZE C OR EQUIV.
MADE IN TAIWAN R.O.C.

• Italian model: 4-032-252-01

FDL-390BE
SONY CORPORATION
ALIMENTAZION 9Vc.c.
ASSORBIMENTO 9.5Wh
TV REALIZZATO CON CANALE "C" VHF
SECONDO NORME ITALIANE DEC. MIN. 9-8-1975 FABBRICATO A TAIWAN R.D.C.



When you read this operating instructions, refer to the illustrations indicated in ■.

Power Sources

Using on House Current A

Use the supplied AC power adaptor.
For the customers in the United Kingdom: Use the Sony AC-E390 AC power adaptor (not supplied).
1 Connect the AC power adaptor to a wall outlet.
2 Connect the AC power adaptor to the DC IN 9V jack of this unit.

After operating this unit with an AC power adaptor, be sure to disconnect the adaptor from the mains.
The power switch on this unit does not turn off the AC power adaptor.

Using on the Alkaline Batteries B

Insert six LR 14 (size C) batteries (not supplied).
1 Remove the battery compartment lid at the rear.
2 Lay the ribbon [a].
3 Insert the batteries with correct polarities.
4 Reinstall the lid.

To remove the batteries
Pull the ribbon. The batteries will come out of the compartment.

Battery replacement
When the batteries become weak, the unit's protective function will automatically cause the picture to disappear. In this case, replace all the batteries with new ones.

Battery life
You can continuously use for approximately 8 hours on the alkaline batteries, or approximately 2.5 hours on the manganese batteries.
The battery life becomes short in a cold place.

Using on Car Battery C

You can use the unit only in a 12 V DC car.
You need the Sony DCC-E190L car battery cord (not supplied).
1 Connect the car battery cord to the cigarette lighter socket.
2 Connect the car battery cord to the DC IN 9V jack of this unit.

Notes

- Use only the supplied or recommended AC power adaptor or DCC-E190L car battery cord. Do not use any other AC power adaptor or car battery cord.
- When the unit is not to be used for a long period of time, remove the batteries to avoid unit damage caused by battery leakage and corrosion.

Polarity of the plug

Watching the TV D

For your safety, do not watch the TV nor operate the controls while driving.

1 Set the POWER switch to ON.
2 Select the band as follows:
For continental European countries, set to VHF or UHF (CCIR).
For the United Kingdom, set to UHF (UK).
The green line on the screen indicates the VHF channels.
The red line indicates the UHF channels.
3 Pull out the antenna fully.
4 Tune in the desired channel.
5 Adjust the length and direction of the antenna.
For UHF, the receiving may be better with the short antenna.
6 Adjust the volume.

To turn off the TV
Set the POWER switch to OFF, and fold the antenna.

If the channel changes
If the power is momentarily lost because of a mechanical shock, or if the unit has passed through a tunnel, the channel may change. If this happens, tune in the desired channel again with CHANNEL +/–.

Adjusting the Picture E

For more brightness, turn the BRIGHT (brightness) control clockwise.
For less brightness, turn the BRIGHT control counterclockwise.
For more colour intensity, turn the COLOUR control clockwise.
For less colour intensity, turn the COLOUR control counterclockwise.

To indicate the current channel
Press the CH (channel) CALL button.
The line (green for VHF, red for UHF) appears at the position of the current channel.

To improve the receiving condition F
Set the TV SIGNAL BOOSTER switch to LOW where the radio wave is strong.
Set the TV SIGNAL BOOSTER switch to HIGH where the radio wave is weak.

To listen with the earphone G
Connect the Sony ME-L91D earphone (not supplied) to the EAR jack.

How to Use the Stand

To watch the TV H
You can adjust the stand in three angles.

To carry the unit I

Using as a Monitor J

You can use the unit as a colour monitor for your VTR or video camera recorder.
Connect your VTR to the AUDIO/VIDEO IN jack using the Sony AVK-715M AV cord (not supplied). Before connection, turn off the unit and the VTR.

Notes

- If the picture is distorted or noisy, move the unit away from the VTR.
- When watching TV, disconnect the plug from the AUDIO/VIDEO IN jack.

Connecting an External Antenna

Receiving will improve.

Connecting the Outdoor Antenna K

[a] to [e] indicate the letters in the illustration.
Connect the VHF antenna [a] and/or the UHF antenna [b] to the EXT ANT jack of this unit using the mixer [c], 75-ohm coaxial cable [d], and EAC-6M antenna cable [e] (not supplied).

Connecting the Car Antenna L

Connect the car antenna (not supplied) to the EXT ANT jack of this unit.

Note

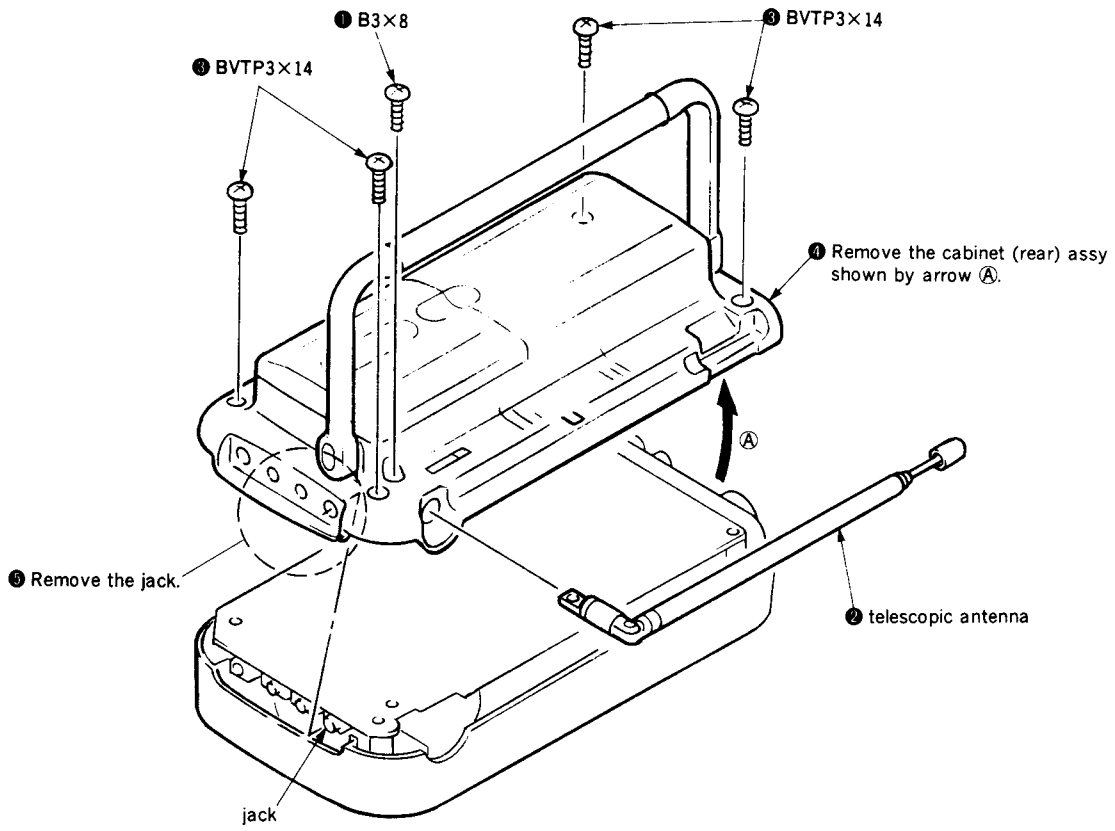
When an external antenna is connected, the TV SIGNAL BOOSTER switch does not function.

This section is extracted from instruction manual.

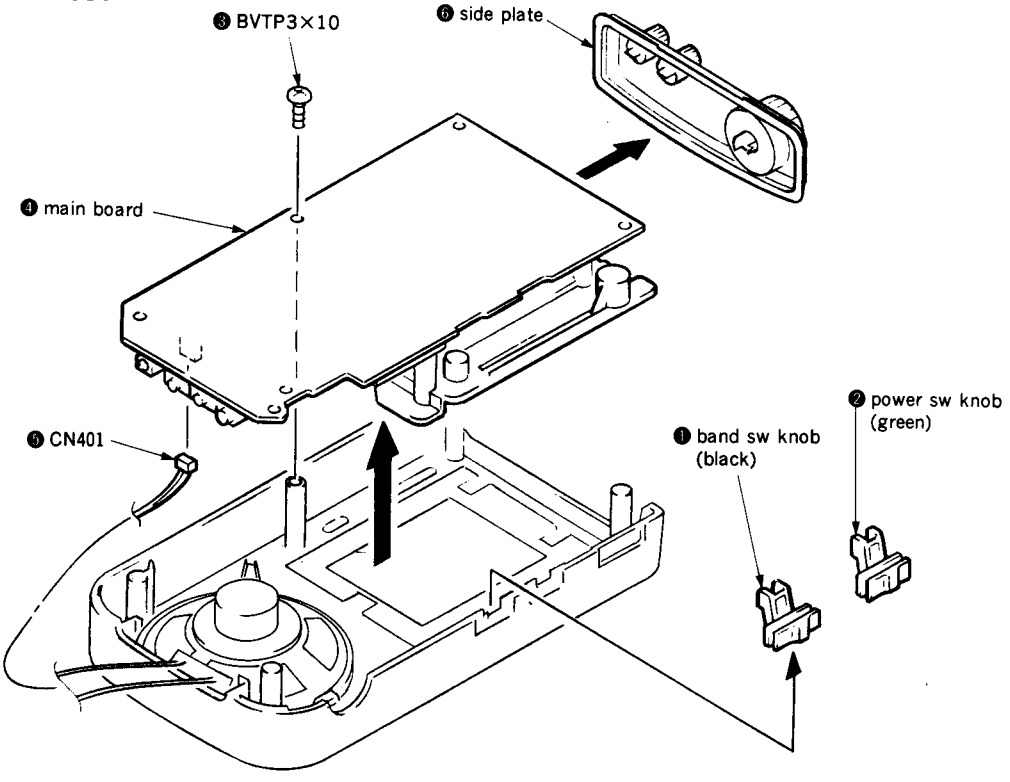
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

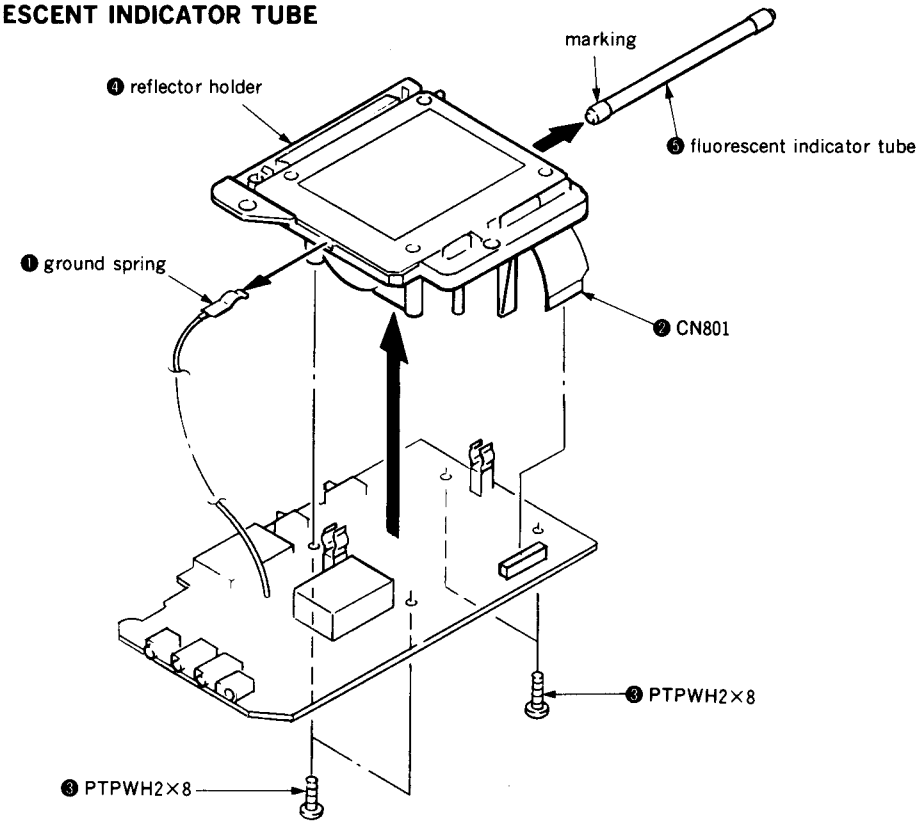
2-1. CABINET (REAR) SUB ASSY



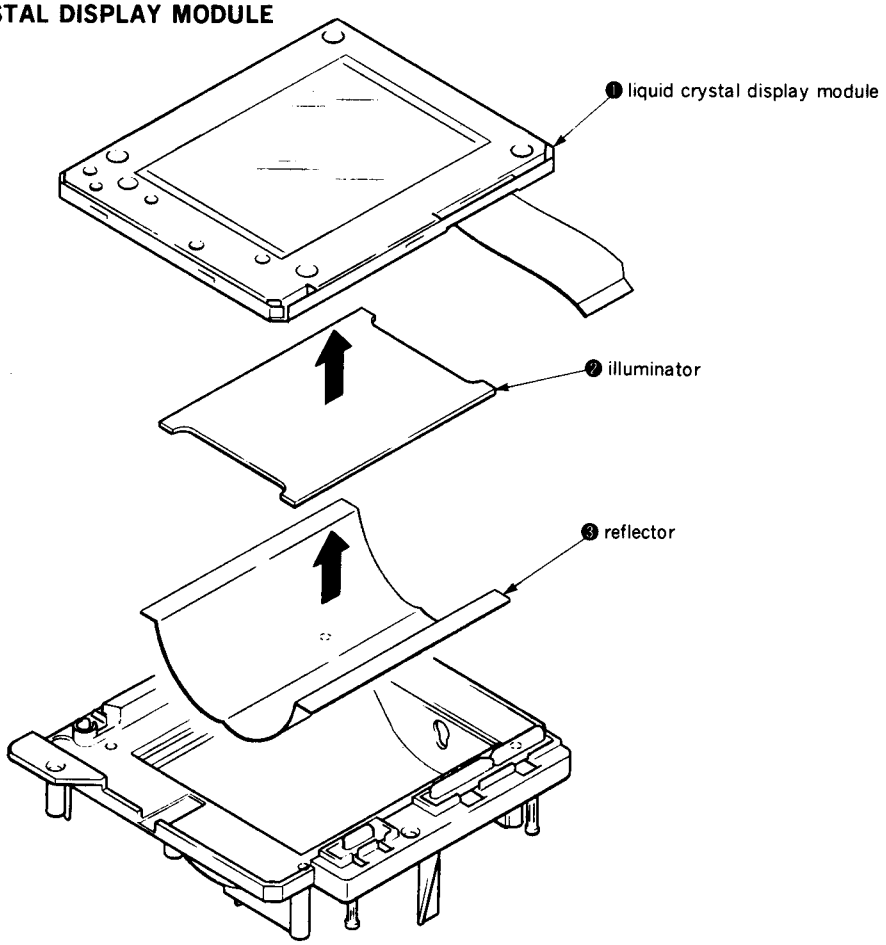
2-2. MAIN BOARD ASSY



2-3. FLUORESCENT INDICATOR TUBE



2-4. LIQUID CRYSTAL DISPLAY MODULE



SECTION 3
ELECTRICAL ADJUSTMENTS

CAUTIONS

1. Make adjustment in sequence as described.
2. Power supply voltage is + 9.0 ± 0.1V (DC jack end) unless otherwise specified. Power supply shall not be input overlapped.
3. Check the error in waveform and screen for adjustment.
4. Measure a fluorescent tube and an Liquid Crystal Display module (LCD) device by connecting them with the main board.
5. Unless otherwise specified, input the color bar signal, etc. from AUDIO/VIDEO IN jack (J501) by using AV-cord (AVK-715M, etc.) to intercept the internal TV detection output.
   Also, usually use monochromatic gradation wave monoscope with chroma signal and burst signal OFF.
6. Measuring instruments
   - PAL pattern generator
   - Digital multitester
   - Oscilloscope
7. Modes of SW, VR
   S601 (POWER) ..... ON
   S101 (BAND) ..... VHF
   S105 (TV SIGNAL BOOSTER) ..... HIGH
   (AEP, UK, E model)
   RV401 (VOLUME) ..... MIN.

VOLTAGE ADJUSTMENT

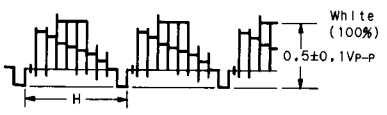
Procedures :

1. Connect a digital multitester between TP605 (+4.8V) and TP602 (GND) on the main board, and then adjust RV601 so that the reading of the voltage is + 4.85 ± 0.05V.
2. Connect a digital multitester between TP606 (−8V) and TP602 (GND), and then adjust RV602 so that the reading of the voltage is $-8.0\ ^{+0.1}_{-0.2}$ V.
3. Connect a digital multitester between TP607 (+4.2V) and TP602 (GND), and then adjust RV603 so that the reading of voltage is $+4.2\ ^{+0.05}_{-0}$ V.

WAVEFORM CHECK/COM ADJUSTMENT

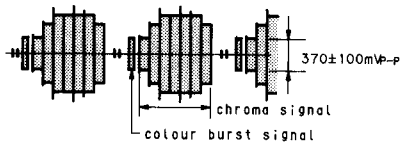
Procedures :

1. Y signal check (H cycle)
   Input the color bar signal from AUDIO/VIEO IN jack (J501).
   Connect an oscilloscope to TP303 (Y) to check if the waveform is as shown in the following figure.

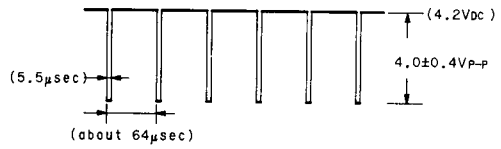


2. SYNC signal check (H cycle)
   Connect an oscilloscope to TP304 (SYNC) to check if the waveform is as shown in the following figure.

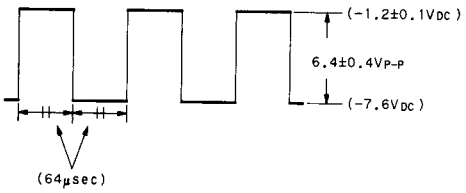
3. Color burst signal check (H cycle)
   Connect an oscilloscope to TP305 (CHROMA) to check if the waveform is as shown in the following figure.



4. H pulse check (H cycle)
   Connect an oscilloscope to TP301 (H PULSE) to check if the waveform is as shown in the following figure.



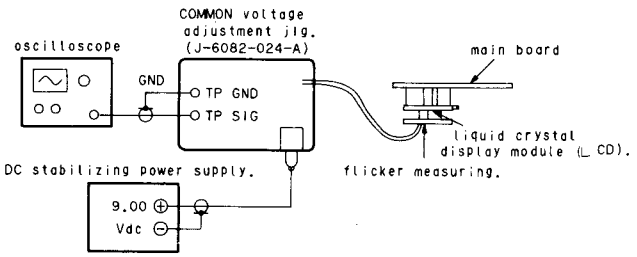
5. COM signal check/adjustment (2H cycle)
   Connect an oscilloscope to TP302 (COM) to check if the waveform is as shown in the following figure.
   Turn and set RV309 at the position where the contrast is the most distinction LCD. (DC level of figure are reference)



COMMON VOLTAGE ADJUSTMENT

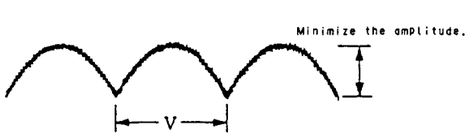
— Adjustment with a jig —

connection :



Procedures :

1. Apply the photo detector unit of COMMON voltage adjustment jig (J-6082-024-A) to the LCD. At this time, turn the LCD downward to avoid interference of external light.
2. Connect an oscilloscope to the common voltage adjustment jig.
3. Input the monochromatic gradation wave from AUDIO/VIDEO IN jack (J501).
4. Turn RV301 to check if the waveform is as shown in the figure below. When flicker waveform is not output, check the applying state of the photo detector unit and the state of external light and then turn the BRIGHT VR (RV305).
5. Minimize the amplitude of flicker waveform with RV301.



* When there is no COMMON voltage adjustment jig, make the following simple adjustment.

— Simple adjustment —

Procedure :

1. Input the monochromatic gradation wave from AUDIO/VIDEO IN jack (J501).
2. Turn and set RV301 at the position where the contrast is the most distinction LCD. Magnify LCD with a magnifier, etc., up to the level where the pixels of LCD can be obtained, and adjust RV301 so that the flickers are minimum while watching the flickers.

BRIGHT VOLTAGE PREADJUSTMENT

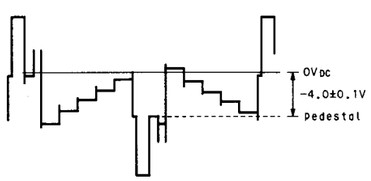
Procedures :

1. Input the color bar from AUDIO/VIDEO IN jack (J501).
2. Connect a digital multitester between TP307 (BRT) and TP311 (GND) and adjust BRIGHT VR (RV305) so that the reading of the voltage is + 1.85 ± 0.02 V.

G BIAS/B BIAS/R BIAS ADJUSTMENTS

Procedures :

1. Turn COLOUR VR (RV307) to minimum (monochrome).
2. Connect a ceramic capacitor (10000pF) between TP305 (CHROMA) and TP311 (GND).
3. Input the monochromatic gradation wave from AUDIO/VIDEO IN jack (J501).
4. Connect an oscilloscope to TP308 (G), and adjust RV306 so that DC level for the pedestal unit of positive polarity G signal is −4.0 ± 0.1V as shown in the following figure. (G bias adjustment)
5. Connect an oscilloscope to TP310 (B), and adjust RV310 so that DC level for the pedestal unit of positive polarity B signal is −4.0±0.1V as shown in the following figure. (B bias adjustment)
6. Connect an oscillospe to TP309 (R), and adjust RV311 so that DC level for the pedestal unit of positive polarity R signal is −4.0±0.1V as shown in the following figure. (R bias adjustment)

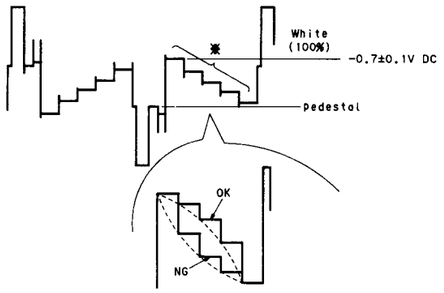


CONTRAST/B GAIN/R GAIN ADJUSTMENTS

Procedures :

1. Input the monochromatic gradation wave from AUDIO/VIDEO IN jack (J501).
2. Connect an oscilloscope to TP308 (G), and adjust RV302 so that the DC voltage the positive polarity G signal of white (100%) is − 0.7 ± 0.1 V as shown in the following figure. (Contrast adjustment)
3. Connect an oscilloscope to TP310 (B), and adjust RV301 so that the DC voltage the positive polarity B signal of white (100%) is −0.7±0.1V as shown in the following figure. (B gain adjustment)
4. Connect an oscilloscope to TP309 (R), and adjust RV303 so that the DC voltage the positive polarity R signal of white (100%) is −0.7±0.1V as shown in the following figure. (R gain adjustment)

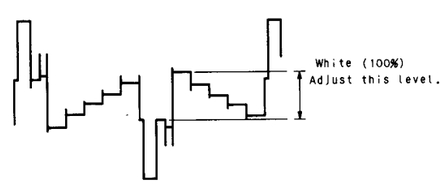
Note : Adjustment the each RV so that the waveform of ※ part is convex to upper side as shown in the following figure.



WHITE BALANCE ADJUSTMENT

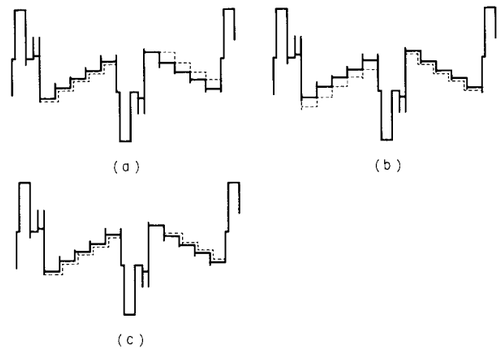
Procedures :

1. Connect the channel 1 of an oscilloscope to TP308 (G). Turn the BRIGHT VR (RV305) counterclockwise to darken the screen. (until the minimum value which can be observed by the oscilloscope is reached.)
2. With the oscilloscope connected to TP308 (G), connect TP309 (R) to the channel 2.
3. Turn RV303 and adjust the DC voltage of the positive polarity R signal in the white direction (100%) to the DC voltage of the positive polarity G signal in the white direction (100%).
4. With the oscilloscope connected to TP308 (G), connect TP310 (B) to the channel 2.
5. Turn RV301 and adjust the DC voltage of the positive polarity B signal in the white direction (100%) to the DC voltage of the positive polarity G signal in the white direction (100%).



6. Connect a digital multitester to TP307 (BRT). Turn RV305 clockwise and brighten the screen so that the reading of the voltage value is + 1.85 ± 0.1 V.
7. Connect TP308 (G) to the channel 1 and TP309 (R) to the channel 2 of the oscilloscope.
8. Turn RV311 and adjust so that the positive and negative polarity R signal overlaps the positive and negative polarity G signal * (the DC level of each tone is matched between these signals).
9. With the oscilloscope connected to TP308 (G), connect TP310 (B) to the channel 2.
10. Turn RV310 and adjust so that the positive and negative polarity B signal overlaps the positive and negative polarity G signal ** (the DC level of each tone is matched between these signals).

*, ** : The positive and negative polarity signal may not be matched with the corresponding signal simultaneously due to variations. (See figures (a) and (b).) In this case, adjust to the average positions of the positive and negative positions. (See figure (c).)



11. Input the monochromatic gradation wave or monoscope signal from AUDIO/VIDEO IN jack (J501).
12. Turn the BRIGHT VR (RV305) and verify that there is only monochrome display with no colors in all of the maximum and minimum positions. If any color is present, readjust RV303 (R GAIN) and RV301 (B GAIN).

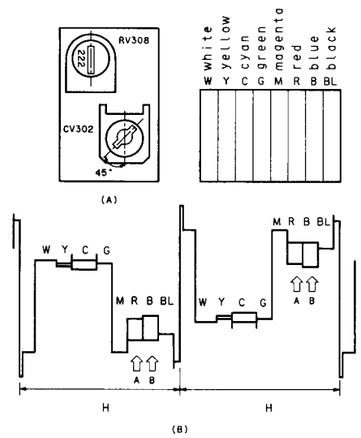
Note : It should be noted that when BRIGHT is darkened, color tends to appear.

13. Remove a ceramic capacitor to connected by G bias adjustment.
14. Input the color bar signal from AUDIO/VIDEO IN jack (J501).
15. Turn the BRIGHT VR (RV305) to maximum and turn the COLOUR VR (RV307) to minimum and verify that the screen changes normally. Lastly, place the respective controls in their center positions.

ANTI PAL ADJUSTMENT-1

Procedures :

1. Input the color bar signal from AUDIO/VIDEO IN jack (J501).
2. Connect a oscilloscope to TP308 (G).
3. Preadjust RV308 and CV302 as shown in the following figure (A).
4. Turn the COLOUR VR (RV307) and BRIGHT VR (RV305) to maximum.
5. Turn the T301 and RV308 and adjust so as completely overlaps on color bar signal (red (⇧ A) and blue (⇧ B) portions) by 2V/div. range of oscilloscope as shown in the following figure (B).



Note : Adjust so as completely overlaps on red and blue portions of color bar signal by 2V/div. range of oscilloscope.

ANTI PAL AD

Procedures :

1. Input the
IN jack (
2. Turn CV3
signal por

Note : Anti P
adjust

FTZ MUTING

Procedures :

1. Unsolder
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between
3. Connect a
4. Connect a
Adjust RV
5. Remove t
2 and 3, s

VIF ADJUST

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L204,
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Procedures :

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3. Adjust L2
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4. Turn and
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(J501).
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colors in all of the
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IO/VIDEO IN jack

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IO/VIDEO IN jack

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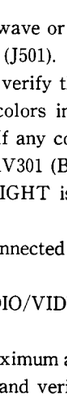
st so as completely
A) and blue (⇧ B)
oscope as shown in

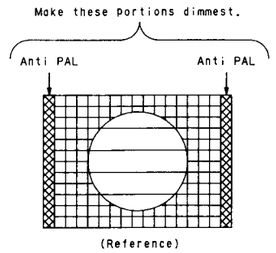


s on red and blue
2V/div. range of

ANTI PAL ADJUSTMENT-2

Procedures :

1. Input the philips pattern signal from the AUDIO/VIDEO IN jack (J501).
2. Turn CV302 and adjust so that the color of the anti PAL signal portions is dimmest on the screen.



Note : Anti PAL adjustment-1 and -2 is as each effect, repeat adjust few times.

FTZ MUTING ADJUSTMENT (Italian model only)

Procedures :

1. Unsolder the TP251.
2. Connect as electrolytic capacitor (10μF/6.3V to 50V) between TP250 and GND.
3. Connect a resistor of 820kΩ between TP251 and GND.
4. Connect a frequency counter between TP251 and GND. Adjust RV261 so that the reading is 31.25±0.1kHz.
5. Remove the capacitor and the resistor connected in items 2 and 3, short the tap.

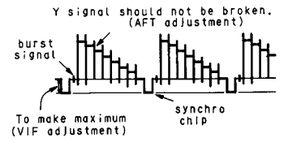
VIF ADJUSTMENT/AFT ADJUSTMENT

Note : These adjustments are not performed usually. Never touch L204 and L205 of adjustment devices. While, only when L204, L205 or capacitors around L204, L205 have been replaced, make the following simple adjustment.

— Simple adjustment —

Procedures :

1. Input the monochromatic gradation wave from TP101 (ANT IN).
2. Connect an oscilloscope to Q301 emitter.
3. Adjust L204 so that the SYNC signal is maximum (VIF adjustment).
4. Turn and L205 to adjust the level so that the screen is colored from monochrome without breaking of Y signal. (AFT adjustment) (Reference value : Vp-p of burst signal is about 60mV.)
5. Receive the broad casts of each channel, and check if the screen is colored after the synchronism is stopped with each channel.



AGC ADJUSTMENT

Procedures :

1. Receive the TV broadcast.
2. Turn and adjust RV201 so that the snow noise is shown.
3. Reversely turn and set RV201 to the point where the snow noise disappears.
4. Receive the broadcast for each channel, and check if there is beat, image distortion of snow noise caused by mixed demodulation.
5. If any beat, image distortion of snow noise are observed, adjust RV201 again.

TUNING ADJUSTMENT

Procedures :

1. Short S104 (CH CALL). (State where the green display bar is shown on the screen.)
2. Receive the broadcast of 2CH by pushing S102 (CHANNEL −) or S103 (CHANNEL +).
3. Adjust RV104 so that the display bar is corresponded to the position of 2CH.
4. Receive the broadcast of 12CH, and adjust RV101 so that the display bar is corresponded to the 12CH.

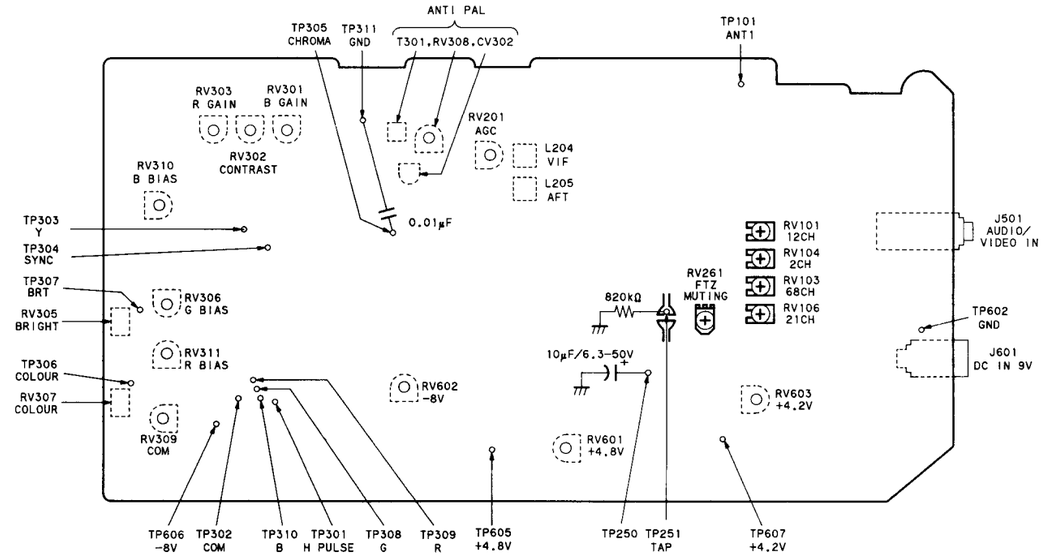
Note : Since the items 3 and 4 will interfere each other, the adjustment is necessary for 2 to 3 times.

5. Receive the broadcasts of 2 to 12CH, and check if the display bar is corresponded to each channel.
6. Set S101 (BAND) to the UHF side to check with the screen if the display bar was turned red.
7. Receive the broadcast of 21CH, and adjust RV106 so that the display bar is corresponded to the position of 21CH.
8. Receive the broadcast of 68CH, and adjust RV103 so that the display bar is corresponded to the position of 68CH.

Note : Since the items of 7 and 8 will interfere each other, the adjustment is necessary for 2 to 3 times.

9. Receive the broadcasts of 21CH to 68CH, and check if the display bar is corresponded to the position of each channel.
10. Disconnect the S104 shorted in the above item 1.

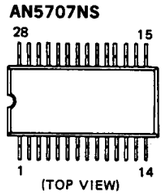
Adjustment Location : main board



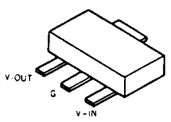
SECTION 4
DIAGRAMS

4-1. SEMICONDUCTOR LEAD LAYOUTS

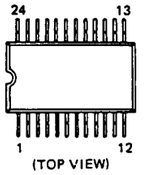
AN5707NS



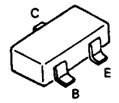
M5236ML



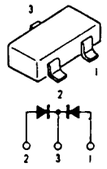
TA8805F



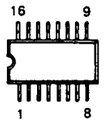
DTC143XK
2SA1162-G
2SA1344
2SC1623
2SC2714-Y
2SC3395
2SC3398
2SC4047



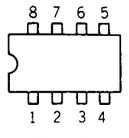
MA152WK



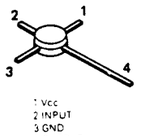
CX20159
TA7370F



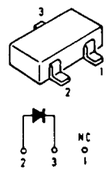
NJM2073D



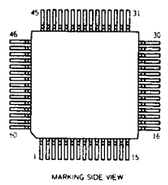
μPC1651G



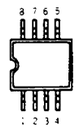
RD10M-B2
RD5.1M-B2
RD5.6M-B2
SB20-03P
1SS153



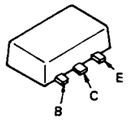
M52003AFP



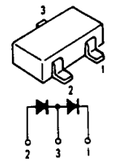
NJM2904M



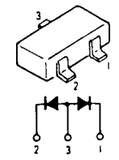
DTB113ZK
2SB798-DL
2SC3647S
2SD999-CLCK



DA204U
1SS226



MA152WA



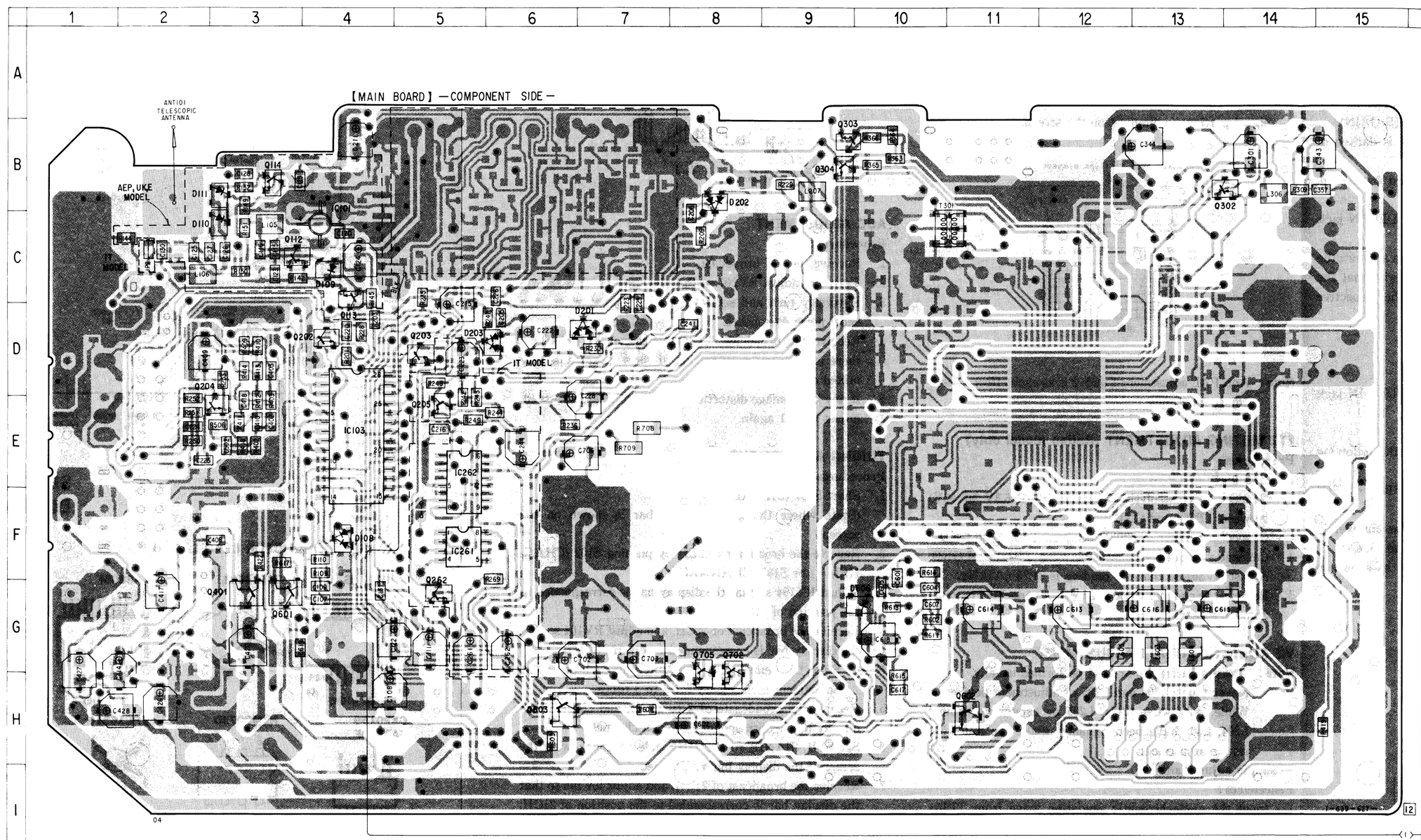
4-2. PRINTED WIRING BOARD • Refer to page 10 for Semiconductor Lead Layouts.

• Semiconductor Location

Ref. No.	Location	Ref. No.	Location
D101(*1)	B-27	Q308	G-18
D102	B-27	Q401	G-3
D103(*2)	C-28	Q404	F-26
D104	G-28	Q601	G-3
D106	E-27	Q602	H-11
D107	E-27	Q603	H-6
D108	F-4	Q701	H-25
D109(*1)	C-4	Q702	G-8
D110(*1)	C-3	Q703	F-26
D111(*1)	B-3	Q704	F-26
D201	D-7	Q705	G-8
D202	B-8	Q706	H-25
D203	D-6	Q707	F-26
D260(*2)	G-27	Q708	H-24
D403	F-29	Q709	H-24
D404	G-30	Q710	F-24
D601	G-21	Q711	F-24
D602	G-20	Q712	G-25
D603	G-21	Q713	G-24
D604	G-20		
D605	G-31		
D606	G-10		
D701	G-25		
D702	G-26		
D703	E-26		
D704	E-25		
IC101(*1)	C-4		
IC102	C-26		
IC103	E-4		
IC201	C-24		
IC261(*2)	F-5		
IC262(*2)	E-5		
IC301	D-20		
IC401	D-29		
IC402	G-30		
IC601	G-22		
IC602	G-29		
Q101	F-28		
Q104	B-26		
Q105	D-27		
Q106	D-26		
Q110	F-28		
Q112(*1)	C-3		
Q113(*1)	C-4		
Q114(*1)	B-3		
Q201	B-25		
Q202	D-4		
Q203	D-5		
Q204	E-3		
Q205(*2)	E-5		
Q260(*2)	E-26		
Q261(*2)	F-26		
Q262(*2)	G-5		
Q301	B-18		
Q302	B-14		
Q303	C-9		
Q304	C-9		
Q305	G-18		
Q306	G-18		
Q307	G-18		

*1: Use on AEP, UK and E model.
*2: Use on Italian model.

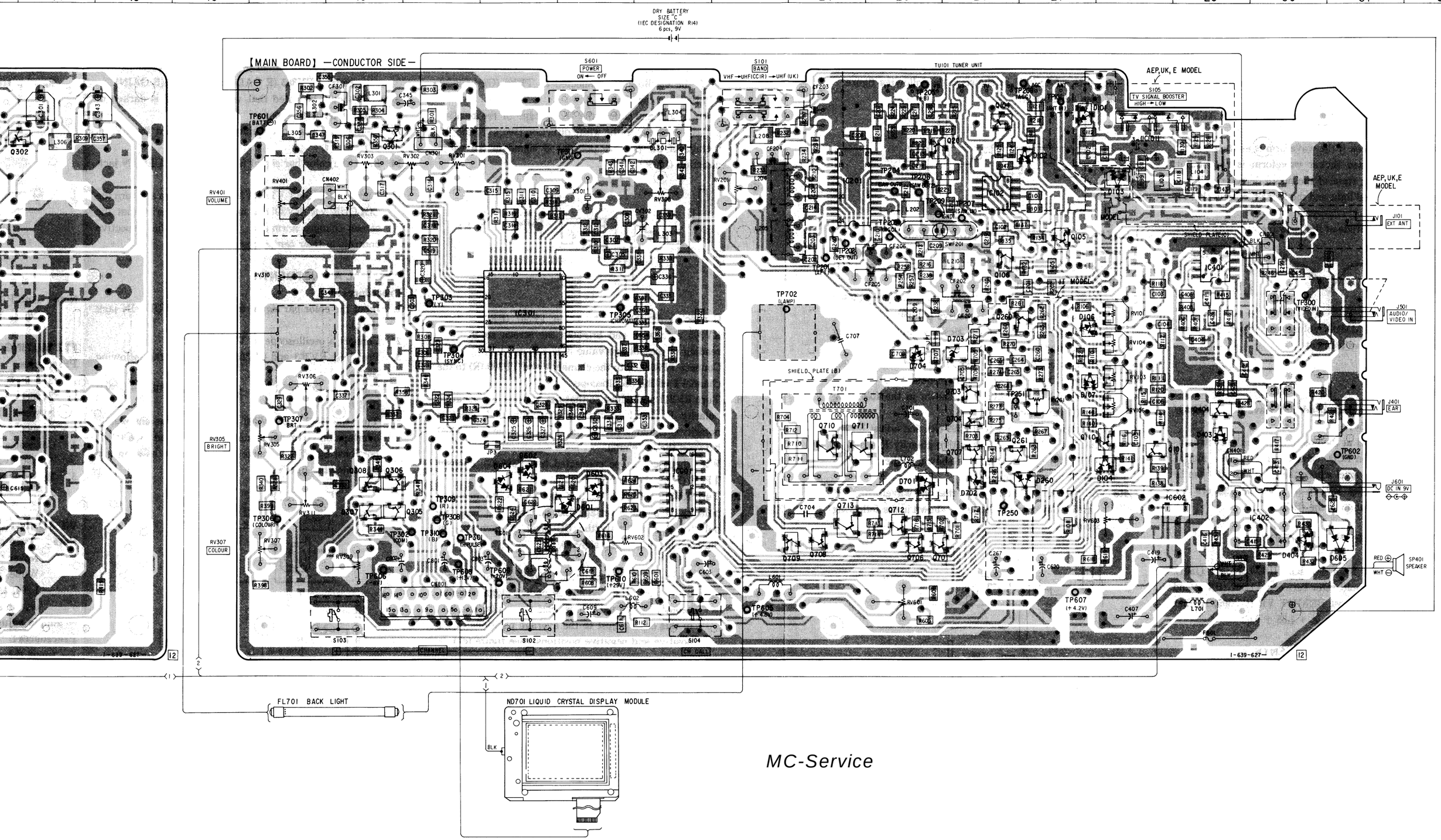
【MAIN BOARD】—COMPONENT SIDE—



Note:
- ○——: parts extracted from the com
- : indicates side identified with p
- ●: Through hole.
- : Pattern on the side which is seen.
- : Pattern of the rear side.
- IT: Italian

MC-Service

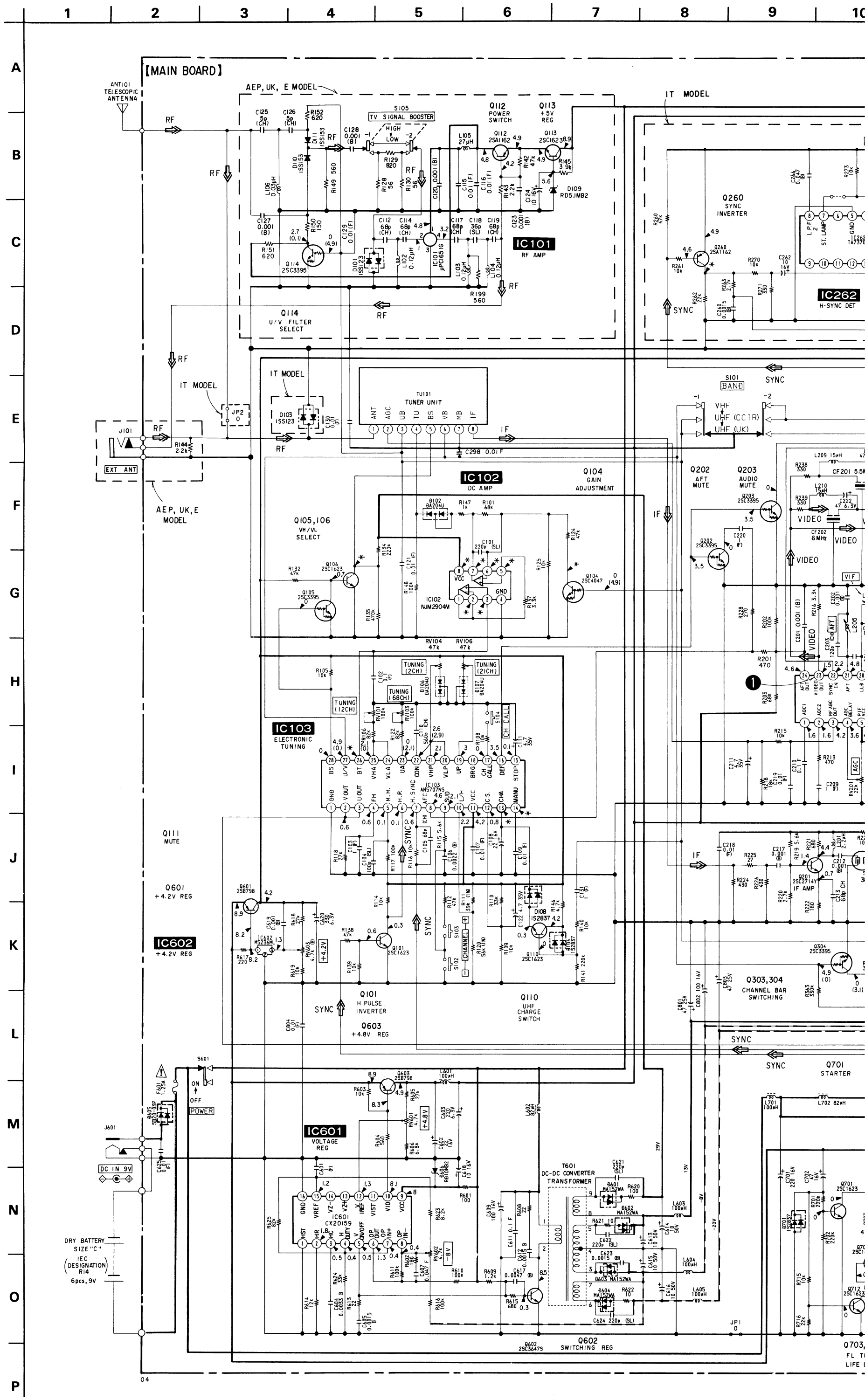
14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32



MC-Service

4-3. SCHEMATIC DIAGRAM

• Refer to page 19 for Tuner Schematic Diagram and IC Block Diagrams.

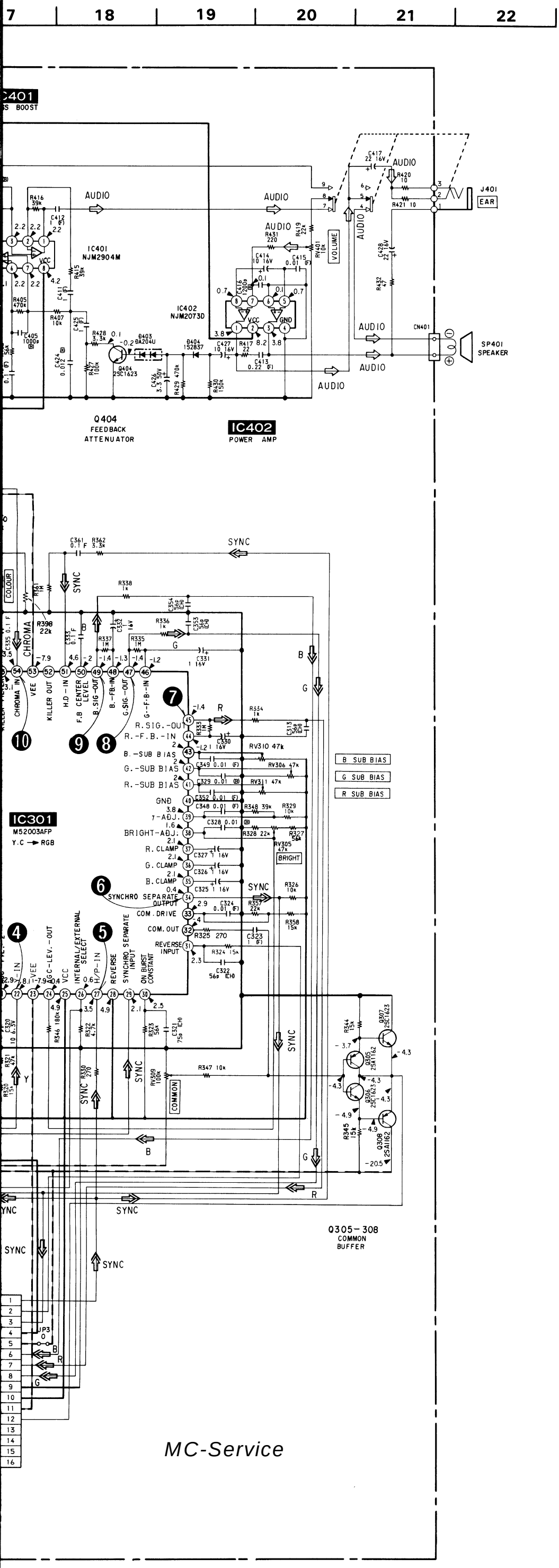


MC-Service

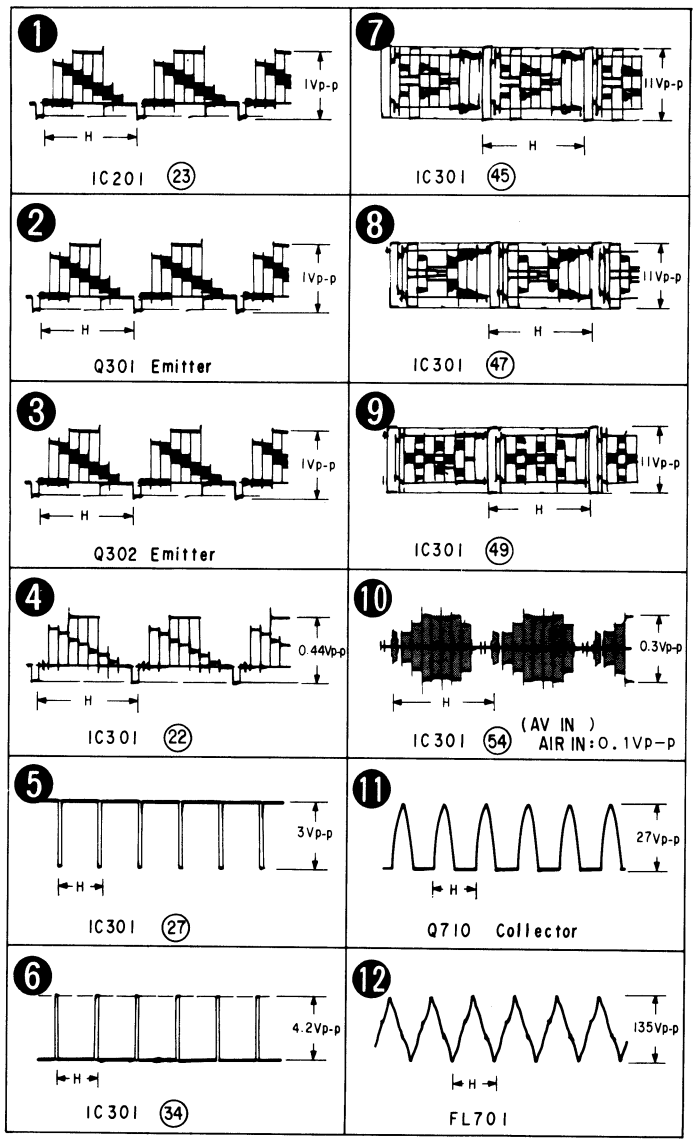
IC261 V·SYNC DET
IC262 H-SYNC DET
IC201 VIF, SIF
IC401 BASS BOOST
IC402 POWER AMP
IC301 M52003AFP Y.C → RGB
Q401 RIPPLE FILTER
Q204 AUDIO BUFFER
Q205 VIDEO BUFFER
Q261 INVERTER
Q262 AUDIO MUTE
Q301 CHROMA BUFFER INVERTER
Q302 Y.SYNC BUFFER
Q303,304 CHANNEL BAR SWITCHING
Q404 FEEDBACK ATTENUATOR
Q701 STARTER
Q702,705–707 PROTECT
Q708,709 FL TUBE LIGHTING SWITCH
Q710,711 OSC
Q703,704 FL TUBE LIFE DET
Q712,713 OSC KICK
T701 DC/AC CONVERTER
LCD UNIT
FL701 BACK LIGHT
CN801

H.SYNC	1
FRP	2
SYNC	3
+13V	4
-20V	5
VB	6
VR	7
VG	8
GND	9
+5V	10
-8V	11
Y.COM	12
	13
(Y.SYNC)	14
(VIDEO DET)	15
(N.C)	16

MC-Service



• Waveforms


1 IC201 (23) 1Vp-p
2 Q301 Emitter 1Vp-p
3 Q302 Emitter 1Vp-p
4 IC301 (22) 0.44Vp-p
5 IC301 (27) 3Vp-p
6 IC301 (34) 4.2Vp-p
7 IC301 (45) 11Vp-p
8 IC301 (47) 11Vp-p
9 IC301 (49) 11Vp-p
10 IC301 (54) (AV IN) AIR IN: 0.1Vp-p 0.3Vp-p
11 Q710 Collector 27Vp-p
12 FL701 135Vp-p

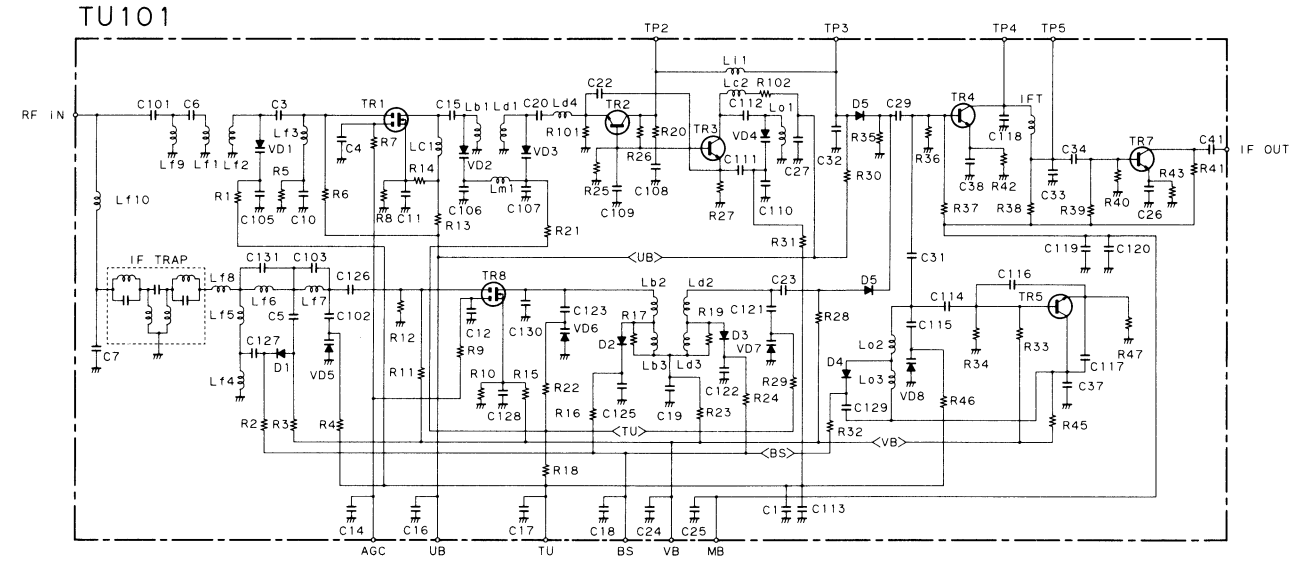
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- % : indicates tolerance.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- ▬▬ : B+ Line
- ▬ ▬ : B− Line
- ▭ : adjustment for repair.
- Power voltage is dc 9V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : VHF
  ( ) : UHF
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- **IT: Italian**

• Tuner Schematic Diagram (Reference)



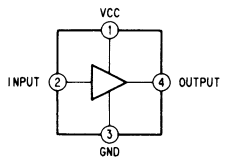
SEMICONDUCTORS ARE AS FOLLOWS.

TR1	:3SK224,3SK199	TR8	:3SK223,3SK194
TR2,3	:HN3C02F	VD1-4	:1SV221,1SV214
TR4,5	:HN3C01F	VD5-6	:1SV215
TR7	:2SC4184	D1-4	:1SS318,1SS314
		D5	:1SS312

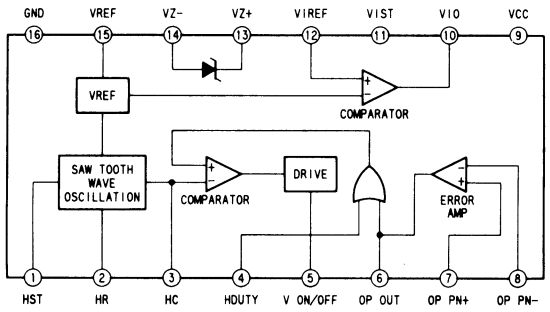
	UHF	VH	VL
MB	5V	5V	5V
UB	5V	OPEN	OPEN
VB	OPEN	5V	5V
BS	SHORT	SHORT	20V
AGC	0-3.5V		

• IC Block Diagrams

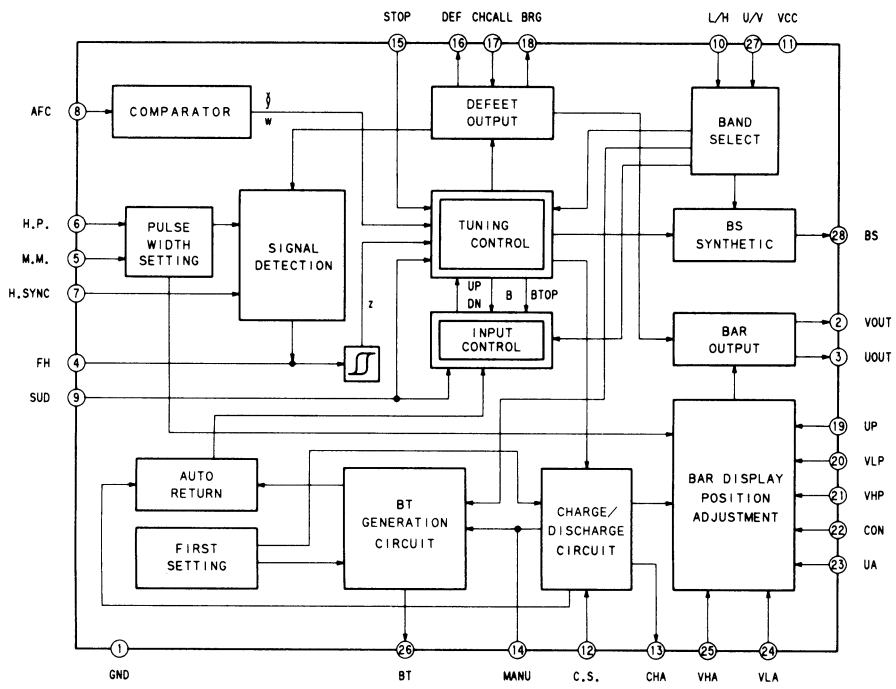
IC101 μPC1651G



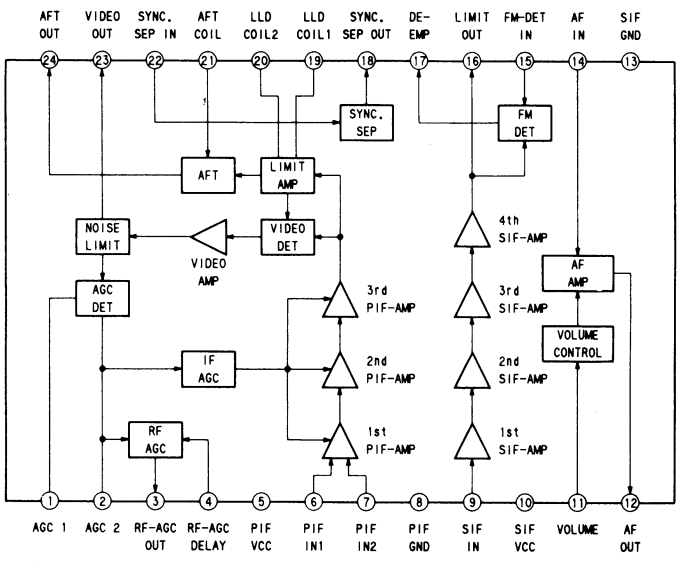
IC601 CX20159



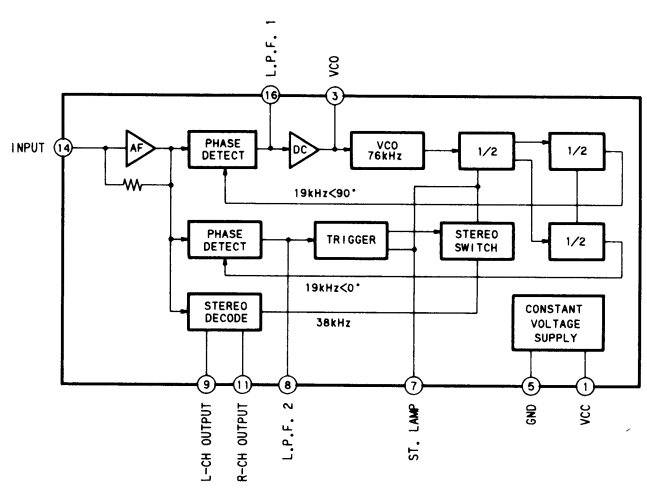
IC103 AN5707NS



IC201 TA8805F



IC262 TA7370F



MC-Service

SECT
PIN DES

5-1. PIN DESCRIPTION

• IC301 M52003AFP

Pin No.	Pin Name	
1	NC	
2	APC FILTER	This pin determin
3	VCXO-OUT	Output of VCXO
4	VCXO-MONI	This pin provides
5	VCXO-IN-1	Feedback input to
6	VCXO-IN-2	Phase Delayed in
7	CHROMA DEMODULATION INPUT	Input pin for the
8	CHROMA DEMODULATION INPUT	Input pin for the
9	SECAM-IN	This pin receives the color killer is
10	SECAM-IN	This pin receives
11	PICTURE QUALITY ADJUST-MENT V	Picture Quality A Decrease it to ha
12	CLAMP VOLUME	Used to adjust so in the clamp leve
13	EXTERNAL B INPUT	External B Signa
14	GAIN-B	Used to adjust th standard. Increas
15	EXTERNAL G INPUT	External G Signa
16	EXTERNAL R INPUT	External R Signa
17	CONT. -ADJ.	Used to adjust th higher contrast.
18	GAIN-R	Used to adjust th
19	AGC-LEV.	Used to set the p
20	AGC-FIL .-1	AGC Filter pin.
21	AGC-FIL .-2	AGC Filter pin.
22	Y-IN	Luminance Signa standard and con
23	$-V_{EE}$	Connection pin fo
24	AGC-LEV. -OUT	This pin outputs voltage will be re
25	V_{CC}	Connection pin fo
26	INTERNAL/EXTERNAL SELECT	Used to switch be select external sig
27	H/P-IN	Input pin for Sync ously with synchr output.
28	REVERSE	Used to control th white. Set it "Lo
29	SYNCHRO SEPARATE INPUT	Synchronous Sepa negatively.
30	ON BURST CONSTANT	Time Constant wh having the time c synchronous sepa

SECTION 5
PIN DESCRIPTION

	Pin Description
	This pin determines the APC time constant of VCXO.
	Output of VCXO oscillator.
	This pin provides monitor output of VCXO oscillator. This is open emitter output.
	Feedback input to VCXO generator.
	Phase Delayed input of the signal from Pin ⑤.
TION	Input pin for the color difference demodulator for B-Y signal.
TION	Input pin for the color difference demodulator for R-Y signal.
	This pin receives output of the color difference decoder for SECAM B-Y. When the color killer is activated, the internal switch will select the SECAM signal side.
	This pin receives output of the color difference decoder for SECAM R-Y.
JUST-	Picture Quality Adjustment pin. Increase the voltage to have sharper picture. Decrease it to have more soft picture.
	Used to adjust so that the internal signal is matched with the external RGB signal in the clamp level.
	External B Signal input. This input is $0.8V_{P-P}$ standard.
	Used to adjust the gain of B signal to ensure white balance. This input is 3.5V standard. Increase the voltage to reduce the gain.
	External G Signal input.
	External R Signal input.
	Used to adjust the contrast of the internal signal. Increase the voltage to have higher contrast. Decrease it to have lower contrast.
	Used to adjust the gain of R signal to ensure white balance.
	Used to set the point at which AGC operates.
	AGC Filter pin.
	AGC Filter pin.
	Luminance Signal Input pin. Pedestal clamp is applied. This input is $0.5V_{P-P}$ standard and comes in as synchronized negatively.
	Connection pin for −7.5V power.
	This pin outputs the point at which AGC operates. When AGC operates, the voltage will be reduced.
	Connection pin for +4.5V power for the interface unit.
L	Used to switch between the internal and external signals. Set this pin "High" to select external signal. Set it to "Low" to select internal signal.
	Input pin for Synchronizing signal from an external source. When used simultaneously with synchronous separation output, this signal must rise earlier than the output.
	Used to control the reverse polarity of output. Set this pin "High" to have normal white. Set it "Low" to have normal black.
	Synchronous Separation input. This input is $1V_{P-P}$ video signal as synchronized negatively.
T	Time Constant which detemines the width of the burst gate. The burst gate pulse having the time determined by this constant is generated at the trailing edge of synchronous separation output.

Pin No.	Pin Name	Pin Description
31	REVERSE INPUT	Output Reversing Pulse input. This reverses common and RGB same time. The polarity of RGB output depends on reverse polar
32	COM. OUT	Common Electrode Drive Output pin.
33	COM. DRIVE	Used to set the amplitude of common electrode drive output.
34	SYNCHRO SEPARATE OUTPUT	Synchronous Separation Output pin. This is open collector output a ized positively. A load resistor should be connected to use this ou
35	B. CLAMP	Connection pin for B signal clamp capacitance.
36	G. CLAMP	Connection pin for G signal clamp capacitance.
37	R. CLAMP	Connection pin for R signal clamp capacitance.
38	BRIGHT-ADJ.	Brightness Adjustment pin. Increase the voltage to have whiter p
39	γ-ADJ.	Used to set the gamma amount of the gamma amplifier. Connect power when gamma amplifier is not required.
40	GND	Grounding pin. This pin should be connected to GND.
41	R. -SUB BIAS	Used to set the bias amount of R signal.
42	G. -SUB BIAS	Used to set the bias amount of G signal.
43	B. -SUB BIAS	Used to set the bias amount of B signal.
44	R. -F. B. -IN	Pin for DC Feedback of R output. R output is integrated and then ir This pin should be connected to $-V_{EE}$ when not used.
45	R. SIG. -OUT	R Signal Output pin. The inverted signal is output.
46	G. -F. B. -IN	Pin for DC Feedback of G output.
47	G. SIG. -OUT	G Signal Output pin.
48	B. -F. B. -IN	Pin for DC Feedback of B output.
49	B. SIG. -OUT	B Signal Output pin.
50	F. B. CENTER LEVEL	Output Feedback Reference Voltage pin. When this voltage is var voltage of output is varied. This pin should be grounded with the c stabilization.
51	H. D. -IN	This pin inputs the HD signal which drives the flip flop for line pu The F/F changes at the rising edge of HD.
52	KILLER OUT	Killer Signal output. When the killer is activated, this output will
53	$-V_{EE}$	Connect this pin to −7.5V power. It has the same potential with
54	CHROMA IN	Chroma Signal Input pin. This input is burst $100mV_{P-P}$ standard.
55	KILLER FILTER	Killer Filter Connecting pin.
56	ACC FILTER	Used to set the ACC time constant.
57	COLOR-CONTROL	Used to control the color level. Increase the voltage to increase th tion.
58	ACC-OUT	This pin outputs chroma signal under ACC. This output is sent thr line and then input into the demodulator. Burst removed signal is
59	BURST CLEANING	Connecting pin for the burst cleaning coil. The demodulation angle adjusting this coil.
60	V_{CC}	This pin is connected to +4.5V power. Video Chroma System Po

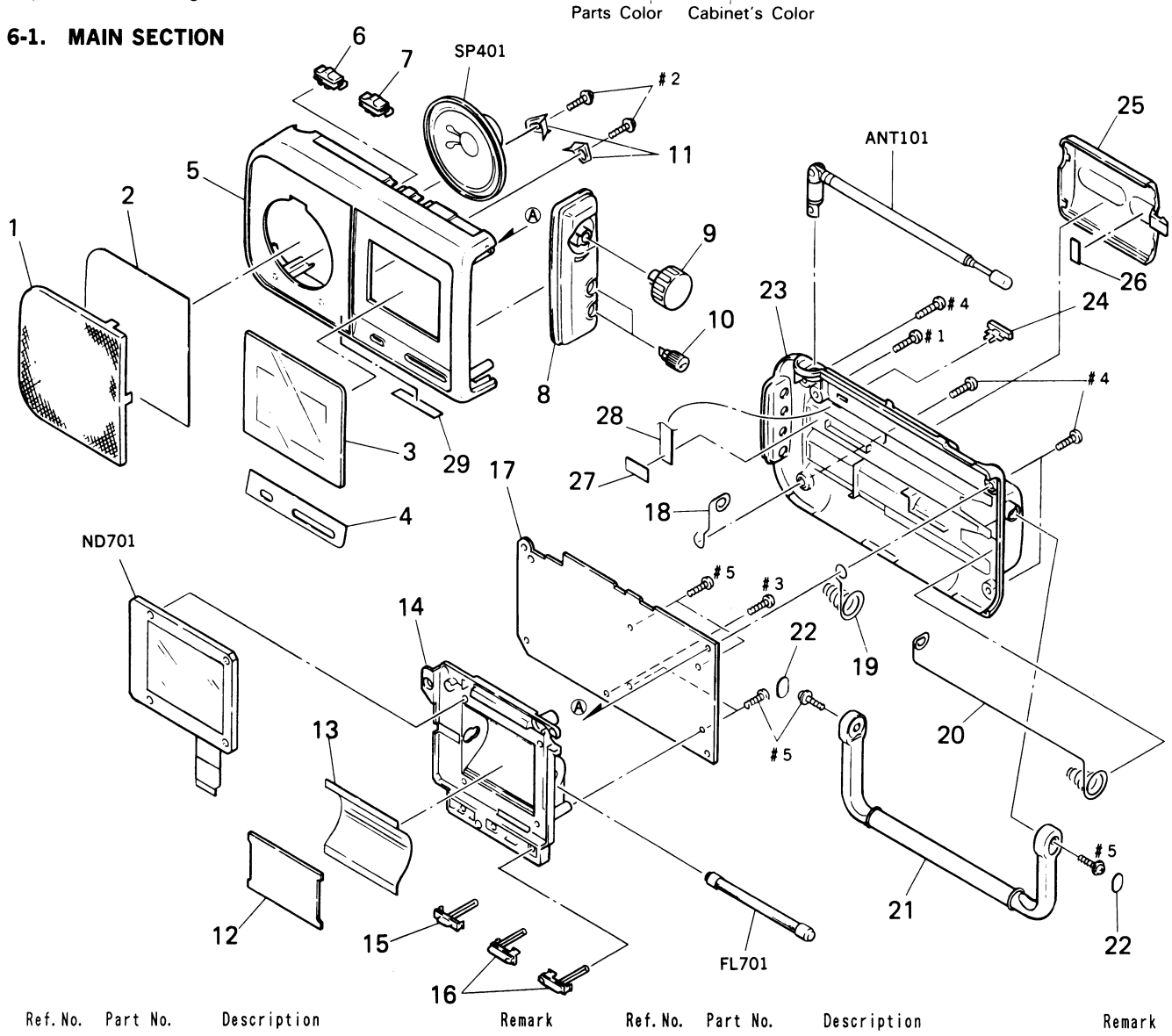
Pin Description
input. This reverses common and RGB outputs at the y of RGB output depends on reverse polarity control.
ve Output pin.
de of common electrode drive output.
Output pin. This is open collector output and is synchron- resistor should be connected to use this output.
gnal clamp capacitance.
gnal clamp capacitance.
gnal clamp capacitance.
pin. Increase the voltage to have whiter picture.
amount of the gamma amplifier. Connect this pin to the plifier is not required.
n should be connected to GND.
ount of R signal.
ount of G signal.
ount of B signal.
R output. R output is integrated and then input to this pin. ected to $-V_{EE}$ when not used.
he inverted signal is output.
G output.
B output.
nce Voltage pin. When this voltage is varied, the center ed. This pin should be grounded with the capacitance for
signal which drives the flip flop for line pulse generation. rising edge of HD.
hen the killer is activated, this output will be High.
5V power. It has the same potential with Pin ㉓.
n. This input is burst $100mV_{P-P}$ standard.
pin.
ne constant.
r level. Increase the voltage to increase the color satura-
a signal under ACC. This output is sent through 1H delay the demodulator. Burst removed signal is output.
urst cleaning coil. The demodulation angle is adjusted by
+4.5V power. Video Chroma System Power pin.

SECTION 6
EXPLODED VIEWS

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts Example:
  KNOB, BALANCE (WHITE)...(RED)
  ↑ Parts Color ↑ Cabinet's Color
- Hardware(# mark) list is given in the last of this parts list.
- IT: Italian model

6-1. MAIN SECTION



Ref. No.	Part No.	Description	Remark
1	4-032-250-01	GRILLE, SPEAKER	
2	4-030-634-01	NET, SP	
3	4-031-772-01	FILTER	
4	4-030-630-01	PLATE, CONTROL (AEP, UK, E)	
4	4-032-251-01	PLATE, CONTROL (IT)	
5	4-031-771-01	CABINET (FRONT) (AEP, UK, E)	
5	4-032-254-01	CABINET (FRONT) (IT)	
6	4-030-831-01	KNOB, BAND SW	
7	4-030-831-11	KNOB, POWER SW	
8	4-031-773-01	PLATE, SIDE (AEP, UK, E)	
8	4-031-773-11	PLATE, SIDE (IT)	
9	4-030-640-01	KNOB, VOLUME	
10	4-030-641-01	KNOB, BRIGHT/COLOUR	
11	3-840-975-00	CLAW, SPEAKER	
12	* 4-030-646-01	ILLUMINATOR	
13	* 4-030-644-01	REFLECTOR	
14	* 4-030-651-01	HOLDER, REFLECTOR	
15	4-030-638-01	BUTTON, CH CALL	
16	4-030-639-01	BUTTON, CHANNEL +/-	
17	* A-3016-090-A	MAIN BOARD, COMPLETE (UK, E)	
17	* A-3016-103-A	MAIN BOARD, COMPLETE (IT)	
17	* A-3016-121-A	MAIN BOARD, COMPLETE (AEP)	
18	4-030-636-01	TERMINAL, BATTERY PLUS	
19	4-030-635-01	SPRING, BATTERY COIL	
20	4-030-642-01	TERMINAL, BATTERY	
21	X-4029-349-1	HANDLE ASSY	
22	4-030-632-01	LABEL, HANDLE	
23	X-4029-382-1	CABINET (REAR) SUB ASSY (AEP, UK, E)	
23	X-4029-714-1	CABINET (REAR) SUB ASSY (IT)	
24	3-336-158-01	KNOB, TV SIGNAL BOOSTER (AEP, UK, E)	
25	4-030-647-01	LID, BATTERY CASE (AEP, UK, E)	
25	4-030-647-11	LID, BATTERY CASE (IT)	
26	9-911-837-XX	CUSHION, BATTERY	
27	3-831-441-XX	CUSHION (A)	
28	4-031-060-01	RIBBON, BATTERY	
29	* 4-032-252-01	LABEL, MODEL NUMBER (IT)	
ANT101	1-501-494-11	ANTENNA, TELESCOPIC	
FL701	1-519-563-11	INDICATOR TUBE, FLUORESCENT	
ND701	1-808-658-11	DISPLAY MODULE, LIQUID CRYSTAL	
SP401	1-544-548-11	SPEAKER (8CM)	

SECTION 7
ELECTRICAL PARTS LIST

MAIN

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.
- CAPACITORS
  uF: μF
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: μH
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD....

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

• IT: Italian model

Ref. No.	Part No.	Description		Remark
	* A-3016-090-A	MAIN BOARD, COMPLETE		(UK, E)
	* A-3016-103-A	MAIN BOARD, COMPLETE		(IT)
	* A-3016-121-A	MAIN BOARD, COMPLETE		(AEP)
		**********		
	4-030-645-01	SPRING, HOLDER		
		< CAPACITOR >		
C101	1-163-125-00	CERAMIC CHIP 220PF	5%	50V
C102	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C103	1-164-346-11	CERAMIC CHIP 1uF		16V
C104	1-163-117-00	CERAMIC CHIP 100PF	5%	50V
C105	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C106	1-164-161-11	CERAMIC CHIP 0.0022uF	10%	100V
C107	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C108	1-126-395-11	ELECT 22uF	20%	16V
C109	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C110	1-163-135-00	CERAMIC CHIP 560PF	5%	50V
C111	1-126-603-11	ELECT CHIP 4.7uF	20%	35V
C112	1-163-113-00	CERAMIC CHIP 68PF	5%	50V (AEP, UK, E)
C114	1-163-113-00	CERAMIC CHIP 68PF	5%	50V (AEP, UK, E)
C115	1-164-232-11	CERAMIC CHIP 0.01uF		50V (AEP, UK, E)
C116	1-164-232-11	CERAMIC CHIP 0.01uF		50V (AEP, UK, E)
C117	1-163-113-00	CERAMIC CHIP 68PF	5%	50V (AEP, UK, E)
C118	1-163-106-00	CERAMIC CHIP 36PF	5%	50V (AEP, UK, E)
C119	1-163-113-00	CERAMIC CHIP 68PF	5%	50V (AEP, UK, E)
C120	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V (AEP, UK, E)
C121	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C122	1-126-603-11	ELECT CHIP 4.7uF	20%	35V
C123	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V (AEP, UK, E)
C124	1-124-779-00	ELECT CHIP 10uF	20%	16V (AEP, UK, E)
C125	1-163-088-00	CERAMIC CHIP 5PF		50V (AEP, UK, E)
C126	1-163-088-00	CERAMIC CHIP 5PF		50V (AEP, UK, E)
C127	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V (AEP, UK, E)
C128	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V (AEP, UK, E)
C129	1-164-232-11	CERAMIC CHIP 0.01uF		50V (AEP, UK, E)
C130	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C131	1-164-346-11	CERAMIC CHIP 1uF		16V
C201	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V
C202	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V
C203	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C204	1-163-119-00	CERAMIC CHIP 120PF	5%	50V
C205	1-163-019-00	CERAMIC CHIP 0.0068uF	10%	50V
C206	1-163-105-00	CERAMIC CHIP 33PF	5%	50V
C207	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C208	1-164-005-11	CERAMIC CHIP 0.47uF		25V
C209	1-164-346-11	CERAMIC CHIP 1uF		16V
C210	1-163-038-00	CERAMIC CHIP 0.1uF		25V
C211	1-126-603-11	ELECT CHIP 4.7uF	20%	35V
C212	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V
C213	1-163-113-00	CERAMIC CHIP 68PF	5%	50V
C214	1-163-085-00	CERAMIC CHIP 2PF		50V
C215	1-124-779-00	ELECT CHIP 10uF	20%	16V
C216	1-164-232-11	CERAMIC CHIP 0.01uF	50V	
C217	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V
C218	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C219	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C220	1-164-346-11	CERAMIC CHIP 1uF		16V
C222	1-126-205-11	ELECT CHIP 47uF	20%	6.3V
C223	1-124-778-00	ELECT CHIP 22uF	20%	6.3V (IT)
C224	1-163-009-11	CERAMIC CHIP 0.001uF	10%	50V
C225	1-164-005-11	CERAMIC CHIP 0.47uF		25V
C226	1-164-005-11	CERAMIC CHIP 0.47uF		25V
C228	1-126-205-11	ELECT CHIP 47uF	20%	6.3V
C229	1-164-232-11	CERAMIC CHIP 0.01uF		50V
C240	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C241	1-163-109-00	CERAMIC CHIP 47PF	5%	50V
C244	1-126-603-11	ELECT CHIP 4.7uF	20%	35V (IT)

MC-Service

MAIN

Ref. No.	Part No.	Description				Remark
C260	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V	(IT)
C261	1-124-778-00	ELECT CHIP	22uF	20%	6.3V	(IT)
C262	1-124-779-00	ELECT CHIP	10uF	20%	16V	(IT)
C263	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	(IT)
C264	1-163-131-00	CERAMIC CHIP	390PF	5%	50V	(IT)
C265	1-164-346-11	CERAMIC CHIP	1uF		16V	(IT)
C266	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V	(IT)
C267	1-126-176-11	ELECT	220uF	20%	10V	(IT)
C298	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C299	1-164-161-11	CERAMIC CHIP	0.0022uF		10%	100V
C301	1-126-205-11	ELECT CHIP	47uF		20%	6.3V
C302	1-163-108-00	CERAMIC CHIP	43PF		5%	50V
C303	1-164-346-11	CERAMIC CHIP	1uF			16V
C305	1-135-091-00	TANTALUM CHIP	1uF		20%	16V
C306	1-163-017-00	CERAMIC CHIP	0.0047uF		5%	50V
C307	1-163-137-00	CERAMIC CHIP	680PF		5%	50V
C308	1-163-097-00	CERAMIC CHIP	15PF		5%	50V
C309	1-163-115-00	CERAMIC CHIP	82PF		5%	50V
C310	1-163-009-11	CERAMIC CHIP	0.001uF		10%	50V
C311	1-163-009-11	CERAMIC CHIP	0.001uF		10%	50V
C312	1-163-105-00	CERAMIC CHIP	33PF		5%	50V
C313	1-163-245-11	CERAMIC CHIP	56PF		5%	50V
C314	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C315	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C316	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C317	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C318	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C319	1-163-038-00	CERAMIC CHIP	0.1uF			25V
C320	1-135-157-21	TANTALUM CHIP	10uF		20%	6.3V
C321	1-163-114-00	CERAMIC CHIP	75PF		5%	50V
C322	1-163-245-11	CERAMIC CHIP	56PF		5%	50V
C323	1-164-346-11	CERAMIC CHIP	1uF			16V
C324	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C325	1-135-091-00	TANTALUM CHIP	1uF		20%	16V
C326	1-135-091-00	TANTALUM CHIP	1uF		20%	16V
C327	1-135-091-00	TANTALUM CHIP	1uF		20%	16V
C328	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C329	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C330	1-135-091-00	TANTALUM CHIP	1uF		20%	16V
C331	1-135-091-00	TANTALUM CHIP	1uF		20%	16V
C332	1-135-091-00	TANTALUM CHIP	1uF		20%	16V
C333	1-163-038-00	CERAMIC CHIP	0.1uF			25V
C334	1-163-009-11	CERAMIC CHIP	0.001uF		10%	50V
C335	1-163-038-00	CERAMIC CHIP	0.1uF			25V
C336	1-135-157-21	TANTALUM CHIP	10uF		20%	6.3V
C337	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C338	1-164-232-11	CERAMIC CHIP	0.01uF			50V
C339	1-163-100-00	CERAMIC CHIP	20PF		5%	50V
C340	1-163-009-11	CERAMIC CHIP	0.001uF		10%	50V

Ref. No.	Part No.	Description			Remark
C341	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C342	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C343	1-126-207-11	ELECT CHIP	33uF	20%	4V
C344	1-126-204-11	ELECT CHIP	47uF	20%	16V
C345	1-126-176-11	ELECT	220uF	20%	10V
C347	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C348	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C349	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C352	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C353	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C354	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C355	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C356	1-163-245-11	CERAMIC CHIP	56PF	5%	50V
C357	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C361	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C402	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C403	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C404	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C405	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C407	1-124-360-00	ELECT	1000uF	20%	16V
C408	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C409	1-126-603-11	ELECT CHIP	4.7uF	20%	35V
C410	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C411	1-164-346-11	CERAMIC CHIP	1uF		16V
C412	1-164-346-11	CERAMIC CHIP	1uF		16V
C413	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C414	1-124-779-00	ELECT CHIP	10uF	20%	16V
C415	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C416	1-163-010-11	CERAMIC CHIP	0.0012uF	10%	50V
C417	1-126-395-11	ELECT	22uF	20%	16V
C418	1-163-019-00	CERAMIC CHIP	0.0068uF	10%	50V
C419	1-124-120-11	ELECT	220uF	20%	25V
C420	1-126-204-11	ELECT CHIP	47uF	20%	16V
C424	1-163-022-00	CERAMIC CHIP	0.012uF	10%	50V
C425	1-164-346-11	CERAMIC CHIP	1uF		16V
C426	1-126-602-11	ELECT CHIP	3.3uF	20%	50V
C427	1-124-779-00	ELECT CHIP	10uF	20%	16V
C428	1-126-395-11	ELECT	22uF	20%	16V
C502	1-164-346-11	CERAMIC CHIP	1uF		16V
C601	1-164-346-11	CERAMIC CHIP	1uF		16V
C602	1-126-395-11	ELECT	22uF	20%	16V
C603	1-126-176-11	ELECT	220uF	20%	10V
C604	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C605	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C607	1-163-035-00	CERAMIC CHIP	0.047uF		50V
C609	1-124-455-00	ELECT	100uF	20%	16V
C611	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C612	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C613	1-126-405-11	ELECT CHIP	10uF	20%	50V

Ref. No.	Part No.	Description			Remark
C614	1-126-405-11	ELECT CHIP	10uF	20%	50V
C615	1-126-405-11	ELECT CHIP	10uF	20%	50V
C616	1-126-405-11	ELECT CHIP	10uF	20%	50V
C617	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C618	1-124-779-00	ELECT CHIP	10uF	20%	16V
C619	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C620	1-124-442-00	ELECT	330uF	20%	6.3V
C621	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C622	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C623	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C624	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C625	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C701	1-124-570-11	ELECT	220uF	20%	16V
C702	1-126-204-11	ELECT CHIP	47uF	20%	16V
C703	1-126-405-11	ELECT CHIP	10uF	20%	50V
C704	1-130-771-00	FILM	0.18uF	10%	63V
C705	1-163-038-00	CERAMIC CHIP	0.1uF		25V
C706	1-126-395-11	ELECT	22uF	20%	16V
C707	1-164-731-11	CERAMIC	120PF	10%	2KV
C708	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C801	1-124-147-00	ELECT	47uF	20%	25V
C802	1-124-455-00	ELECT	100uF	20%	16V
C803	1-124-147-00	ELECT	47uF	20%	25V
C804	1-164-232-11	CERAMIC CHIP	0.01uF		50V
		< FILTER >			
CF201	1-409-369-00	TRAP, CERAMIC 5.5MHz			
CF202	1-579-349-11	FILTER, CERAMIC 6MHz			
CF203	1-567-662-11	FILTER, CERAMIC 6MHz			
CF204	1-567-567-11	FILTER, CERAMIC 5.5MHz			
CF205	1-567-566-11	FILTER, CERAMIC 5.5MHz			
CF206	1-567-661-11	FILTER, CERAMIC 6MHz			
CF301	1-579-348-11	FILTER, CERAMIC 4.43MHz			
		< CONNECTOR >			
CN401	* 1-564-704-11	PIN, CONNECTOR (SMALL TYPE) 2P			
CN801	1-565-073-11	SOCKET, CONNECTOR 16P			
		< TRIMMER >			
CV302	1-141-298-11	CAP, TRIMMER 30PF			
		< DIODE >			
D101	8-719-800-76	DIODE	1SS226 (AEP, UK, E)		
D102	8-719-941-23	DIODE	DA204U		
D103	8-719-800-76	DIODE	1SS226 (IT)		
D104	8-719-400-18	DIODE	MA152WK		
D106	8-719-941-23	DIODE	DA204U		

Ref. No.	Part No.	Description	Remark
D107	8-719-941-23	DIODE DA204U	
D108	8-719-400-18	DIODE MA152WK	
D109	8-719-105-82	DIODE RD5.1M-B2	(AEP, UK, E)
D110	8-719-108-01	DIODE 1SS153	(AEP, UK, E)
D111	8-719-108-01	DIODE 1SS153	(AEP, UK, E)
D201	8-719-400-18	DIODE MA152WK	
D202	8-719-400-18	DIODE MA152WK	
D203	8-719-400-18	DIODE MA152WK	
D260	8-719-400-18	DIODE MA152WK	(IT)
D403	8-719-941-23	DIODE DA204U	
D404	8-719-400-18	DIODE MA152WK	
D601	8-719-400-20	DIODE MA152WA	
D602	8-719-400-20	DIODE MA152WA	
D603	8-719-400-20	DIODE MA152WA	
D604	8-719-400-20	DIODE MA152WA	
D605	8-719-974-51	DIODE SB20-03P	
D606	8-719-106-53	DIODE RD10M-B2	
D701	8-719-400-18	DIODE MA152WK	
D702	8-719-105-82	DIODE RD5.1M-B2	
D703	8-719-105-82	DIODE RD5.1M-B2	
D704	8-719-941-23	DIODE DA204U	
		< DELAY LINE >	
DL301	1-415-649-11	DELAY LINE, 1H (ULTRASONIC)	
		< FUSE >	
F601	⚠ 1-532-777-21	FUSE, MICRO (SECONDARY) (1.25A)	
		< IC >	
IC101	8-759-107-67	IC uPC1651G	(AEP, UK, E)
IC102	8-759-981-69	IC NJM2904M	
IC103	8-759-420-88	IC AN5707NS	
IC201	8-759-246-18	IC TA8805F	
IC261	8-759-981-69	IC NJM2904M	(IT)
IC262	8-759-206-91	IC TA7370F	(IT)
IC301	8-759-635-37	IC M52003AFP	
IC401	8-759-981-69	IC NJM2904M	
IC402	8-759-701-54	IC NJM2073D	
IC601	8-759-802-39	IC CX20159	
IC602	8-759-630-27	IC M5236ML	
		< JACK >	
J101	1-507-974-11	JACK (EXT ANT)	(AEP, UK, E)
J401	1-568-593-51	JACK 1P (EAR)	
J501	1-568-593-51	JACK 1P (AUDIO/VIDEO IN)	
J601	1-569-966-11	JACK, DC (DC IN 9V)	

MC-Service

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

MAIN

Ref. No.	Part No.	Description			Remark
		< JUMPER RESISTOR >			
JP1	1-216-295-00	METAL CHIP	0	5% 1/10W	
JP2	1-216-295-00	METAL CHIP	0	5% 1/10W	(IT)
JP3	1-216-295-00	METAL CHIP	0	5% 1/10W	
		< COIL >			
L102	1-410-730-11	INDUCTOR CHIP	0.12uH		(AEP, UK, E)
L103	1-410-730-11	INDUCTOR CHIP	0.12uH		(AEP, UK, E)
L104	1-410-730-11	INDUCTOR CHIP	0.12uH		(AEP, UK, E)
L105	1-410-386-11	INDUCTOR CHIP	27uH		(AEP, UK, E)
L106	1-410-800-11	INDUCTOR CHIP	0.03uH		(AEP, UK, E)
L201	1-410-373-31	INDUCTOR CHIP	2.2uH		
L202	1-410-373-31	INDUCTOR CHIP	2.2uH		
L204	1-404-633-11	COIL, VIF DETECTOR			
L205	1-404-633-11	COIL, VIF DETECTOR			
L207	1-410-386-11	INDUCTOR CHIP	27uH		
L208	1-410-386-11	INDUCTOR CHIP	27uH		
L209	1-410-383-31	INDUCTOR CHIP	15uH		
L210	1-410-383-31	INDUCTOR CHIP	15uH		
L301	1-410-384-31	INDUCTOR CHIP	18uH		
L302	1-410-385-11	INDUCTOR CHIP	22uH		
L303	1-410-387-11	INDUCTOR CHIP	33uH		
L304	1-410-383-31	INDUCTOR CHIP	15uH		
L305	1-410-385-11	INDUCTOR CHIP	22uH		
L306	1-410-385-11	INDUCTOR CHIP	22uH		
L601	1-460-032-11	COIL, CHOKE 100uH			
L602	1-424-298-11	COIL, CHOKE 82uH			
L603	1-412-032-11	INDUCTOR, CHIP 100uH			
L604	1-412-032-11	INDUCTOR, CHIP 100uH			
L605	1-412-032-11	INDUCTOR, CHIP 100uH			
L701	1-460-032-11	COIL, CHOKE 100uH			
L702	1-424-298-11	COIL, CHOKE 82uH			
		< TRANSISTOR >			
Q101	8-729-100-66	TRANSISTOR	2SC1623		
Q104	8-729-805-94	TRANSISTOR	2SC4047		
Q105	8-729-805-45	TRANSISTOR	2SC3395		
Q106	8-729-100-66	TRANSISTOR	2SC1623		
Q110	8-729-100-66	TRANSISTOR	2SC1623		
Q112	8-729-216-22	TRANSISTOR	2SA1162-G		(AEP, UK, E)
Q113	8-729-100-66	TRANSISTOR	2SC1623		(AEP, UK, E)
Q114	8-729-805-45	TRANSISTOR	2SC3395		(AEP, UK, E)
Q201	8-729-200-87	TRANSISTOR	2SC2714-Y		
Q202	8-729-805-45	TRANSISTOR	2SC3395		
Q203	8-729-805-45	TRANSISTOR	2SC3395		
Q204	8-729-100-66	TRANSISTOR	2SC1623		
Q205	8-729-216-22	TRANSISTOR	2SA1162-G		(IT)
Q260	8-729-216-22	TRANSISTOR	2SA1162-G		(IT)
Q261	8-729-100-66	TRANSISTOR	2SC1623		(IT)
Q262	8-729-100-66	TRANSISTOR	2SC1623		(IT)
Q301	8-729-100-66	TRANSISTOR	2SC1623		
Q302	8-729-216-22	TRANSISTOR	2SA1162-G		
Q303	8-729-805-45	TRANSISTOR	2SC3395		
Q304	8-729-805-45	TRANSISTOR	2SC3395		
Q305	8-729-216-22	TRANSISTOR	2SA1162-G		
Q306	8-729-100-66	TRANSISTOR	2SC1623		
Q307	8-729-100-66	TRANSISTOR	2SC1623		
Q308	8-729-216-22	TRANSISTOR	2SA1162-G		
Q401	8-729-140-75	TRANSISTOR	2SD999-CLCK		
Q404	8-729-100-66	TRANSISTOR	2SC1623		
Q601	8-729-101-07	TRANSISTOR	2SB798-DL		
Q602	8-729-821-55	TRANSISTOR	2SC3647S		
Q603	8-729-101-07	TRANSISTOR	2SB798-DL		
Q701	8-729-100-66	TRANSISTOR	2SC1623		
Q702	8-729-904-60	TRANSISTOR	DTB113ZK		
Q703	8-729-100-66	TRANSISTOR	2SC1623		
Q704	8-729-216-22	TRANSISTOR	2SA1162-G		
Q705	8-729-805-41	TRANSISTOR	2SC3398		
Q706	8-729-805-65	TRANSISTOR	2SA1344		
Q707	8-729-805-41	TRANSISTOR	2SC3398		
Q708	8-729-805-65	TRANSISTOR	2SA1344		
Q709	8-729-920-34	TRANSISTOR	DTC143XK		
Q710	8-729-821-55	TRANSISTOR	2SC3647S		
Q711	8-729-821-55	TRANSISTOR	2SC3647S		
Q712	8-729-100-66	TRANSISTOR	2SC1623		
Q713	8-729-101-07	TRANSISTOR	2SB798-DL		
		< RESISTOR >			
R101	1-216-093-00	METAL CHIP	68K	5% 1/10W	
R105	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R106	1-216-095-00	METAL CHIP	82K	5% 1/10W	
R108	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R109	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R110	1-216-085-00	METAL CHIP	33K	5% 1/10W	
R111	1-216-748-11	METAL CHIP	39K	5% 1/10W	
R112	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R114	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R115	1-216-067-00	METAL CHIP	5.6K	5% 1/10W	
R116	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R117	1-216-097-00	METAL CHIP	100K	5% 1/10W	
R118	1-216-083-00	METAL CHIP	27K	5% 1/10W	
R120	1-216-091-00	METAL CHIP	56K	5% 1/10W	
R122	1-216-095-00	METAL CHIP	82K	5% 1/10W	
R124	1-216-089-00	METAL CHIP	47K	5% 1/10W	
R125	1-216-073-00	METAL CHIP	10K	5% 1/10W	
R128	1-216-019-00	METAL CHIP	56	5% 1/10W	(AEP, UK, E)
R129	1-216-047-00	METAL CHIP	820	5% 1/10W	(AEP, UK, E)

Ref. No.	Part No.	Description				Remark
R130	1-216-019-00	METAL CHIP	56	5%	1/10W	(AEP, UK, E)
R132	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R134	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R135	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R137	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R138	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R139	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R140	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R141	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R142	1-216-089-00	METAL CHIP	47K	5%	1/10W	(AEP, UK, E)
R143	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(AEP, UK, E)
R144	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(AEP, UK, E)
R145	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	(AEP, UK, E)
R146	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R147	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R148	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R149	1-216-043-00	METAL CHIP	560	5%	1/10W	(AEP, UK, E)
R150	1-216-029-00	METAL CHIP	150	5%	1/10W	(AEP, UK, E)
R151	1-216-044-00	METAL CHIP	620	5%	1/10W	(AEP, UK, E)
R152	1-216-044-00	METAL CHIP	620	5%	1/10W	(AEP, UK, E)
R199	1-216-043-00	METAL CHIP	560	5%	1/10W	
R201	1-216-041-00	METAL CHIP	470	5%	1/10W	
R202	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R203	1-216-093-00	METAL CHIP	68K	5%	1/10W	
R207	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R209	1-216-045-00	METAL CHIP	680	5%	1/10W	
R210	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R211	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R212	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R213	1-216-041-00	METAL CHIP	470	5%	1/10W	
R215	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R216	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R218	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R219	1-216-067-00	METAL CHIP	5.6K	5%	1/10W	
R220	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R221	1-216-045-00	METAL CHIP	680	5%	1/10W	
R222	1-216-031-00	METAL CHIP	180	5%	1/10W	
R223	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R224	1-216-040-00	METAL GLAZE	430	5%	1/10W	
R225	1-216-011-00	METAL CHIP	27	5%	1/10W	
R226	1-216-040-00	METAL GLAZE	430	5%	1/10W	
R227	1-216-025-00	METAL CHIP	100	5%	1/10W	
R228	1-216-035-00	METAL CHIP	270	5%	1/10W	
R229	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R230	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R231	1-216-035-00	METAL CHIP	270	5%	1/10W	
R232	1-216-063-00	METAL CHIP	3.9K	5%	1/10W	
R233	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R234	1-216-035-00	METAL CHIP	270	5%	1/10W	
R235	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R236	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R238	1-216-037-00	METAL CHIP	330	5%	1/10W	
R239	1-216-037-00	METAL CHIP	330	5%	1/10W	
R240	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R242	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R243	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	(IT)
R244	1-216-089-00	METAL CHIP	47K	5%	1/10W	(IT)
R245	1-216-311-00	METAL CHIP	6.8	5%	1/10W	
R246	1-216-021-00	METAL CHIP	68	5%	1/10W	
R247	1-216-075-00	METAL CHIP	12K	5%	1/10W	(IT)
R248	1-216-091-00	METAL CHIP	56K	5%	1/10W	(IT)
R249	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(IT)
R250	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R251	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R252	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R253	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R254	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R257	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	
R258	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R260	1-216-089-00	METAL CHIP	47K	5%	1/10W	(IT)
R261	1-216-073-00	METAL CHIP	10K	5%	1/10W	(IT)
R262	1-216-081-00	METAL CHIP	22K	5%	1/10W	(IT)
R263	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	(IT)
R264	1-216-085-00	METAL CHIP	33K	5%	1/10W	(IT)
R265	1-216-073-00	METAL CHIP	10K	5%	1/10W	(IT)
R266	1-216-093-00	METAL CHIP	68K	5%	1/10W	(IT)
R267	1-216-097-00	METAL CHIP	100K	5%	1/10W	(IT)
R268	1-216-073-00	METAL CHIP	10K	5%	1/10W	(IT)
R269	1-216-085-00	METAL CHIP	33K	5%	1/10W	(IT)
R270	1-216-073-00	METAL CHIP	10K	5%	1/10W	(IT)
R271	1-216-037-00	METAL CHIP	330	5%	1/10W	(IT)
R272	1-216-085-00	METAL CHIP	33K	5%	1/10W	(IT)
R273	1-216-073-00	METAL CHIP	10K	5%	1/10W	(IT)
R274	1-216-075-00	METAL CHIP	12K	5%	1/10W	(IT)
R275	1-216-017-00	METAL CHIP	47	5%	1/10W	(IT)
R301	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R302	1-216-029-00	METAL CHIP	150	5%	1/10W	
R303	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R304	1-216-043-00	METAL CHIP	560	5%	1/10W	
R305	1-216-029-00	METAL CHIP	150	5%	1/10W	
R306	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R308	1-216-027-00	METAL CHIP	120	5%	1/10W	
R309	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R310	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R311	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R312	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R313	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R314	1-216-039-00	METAL CHIP	390	5%	1/10W	

MAIN

Ref. No.	Part No.	Description				Remark
R315	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R316	1-216-079-00	METAL CHIP	18K	5%	1/10W	
R317	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R319	1-216-055-00	METAL CHIP	1.8K	5%	1/10W	
R320	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R321	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R322	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R323	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R324	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R325	1-216-035-00	METAL CHIP	270	5%	1/10W	
R326	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R327	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R328	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R329	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R330	1-216-035-00	METAL CHIP	270	5%	1/10W	
R333	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R334	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R335	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R336	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R337	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R338	1-216-049-00	METAL CHIP	1K	5%	1/10W	
R339	1-216-104-00	METAL CHIP	200K	5%	1/10W	
R340	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R342	1-216-043-00	METAL CHIP	560	5%	1/10W	
R343	1-216-043-00	METAL CHIP	560	5%	1/10W	
R344	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R345	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R346	1-216-103-00	METAL CHIP	180K	5%	1/10W	
R347	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R348	1-216-748-11	METAL CHIP	39K	5%	1/10W	
R350	1-216-043-00	METAL CHIP	560	5%	1/10W	
R357	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R358	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R361	1-216-121-00	METAL CHIP	1M	5%	1/10W	
R362	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R363	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R364	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R365	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R366	1-216-109-00	METAL CHIP	330K	5%	1/10W	
R398	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R399	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R402	1-216-059-00	METAL CHIP	2.7K	5%	1/10W	
R403	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R405	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R406	1-216-091-00	METAL CHIP	56K	5%	1/10W	
R407	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R409	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R410	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R411	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R412	1-216-748-11	METAL CHIP	39K	5%	1/10W	
R413	1-216-748-11	METAL CHIP	39K	5%	1/10W	
R414	1-216-089-00	METAL CHIP	47K	5%	1/10W	
R415	1-216-748-11	METAL CHIP	39K	5%	1/10W	
R416	1-216-748-11	METAL CHIP	39K	5%	1/10W	
R417	1-216-009-00	METAL CHIP	22	5%	1/10W	
R418	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R419	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R420	1-216-001-00	METAL CHIP	10	5%	1/10W	
R421	1-216-001-00	METAL CHIP	10	5%	1/10W	
R422	1-216-037-00	METAL CHIP	330	5%	1/10W	
R427	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R428	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R429	1-216-113-00	METAL CHIP	470K	5%	1/10W	
R430	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R431	1-216-033-00	METAL CHIP	220	5%	1/10W	
R432	1-216-017-00	METAL CHIP	47	5%	1/10W	
R506	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R601	1-216-025-00	METAL CHIP	100	5%	1/10W	
R602	1-216-031-00	METAL CHIP	180	5%	1/10W	
R603	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R604	1-216-043-00	METAL CHIP	560	5%	1/10W	
R605	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R606	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	
R608	1-216-009-00	METAL CHIP	22	5%	1/10W	
R609	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R610	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R611	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R613	1-216-009-00	METAL CHIP	22	5%	1/10W	
R614	1-216-075-00	METAL CHIP	12K	5%	1/10W	
R615	1-216-045-00	METAL CHIP	680	5%	1/10W	
R616	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R617	1-216-033-00	METAL CHIP	220	5%	1/10W	
R618	1-216-083-00	METAL CHIP	27K	5%	1/10W	
R619	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R620	1-216-025-00	METAL CHIP	100	5%	1/10W	
R621	1-216-001-00	METAL CHIP	10	5%	1/10W	
R622	1-216-001-00	METAL CHIP	10	5%	1/10W	
R623	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	
R624	1-216-085-00	METAL CHIP	33K	5%	1/10W	
R625	1-216-095-00	METAL CHIP	82K	5%	1/10W	
R701	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R702	1-216-105-00	METAL CHIP	220K	5%	1/10W	
R703	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R704	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R705	1-216-065-00	METAL CHIP	4.7K	5%	1/10W	
R706	1-216-077-00	METAL CHIP	15K	5%	1/10W	
R707	1-216-101-00	METAL CHIP	150K	5%	1/10W	
R708	1-216-258-00	METAL GLAZE	330K	5%	1/8W	

Ref.No.	Part No.	Description				Remark
R709	1-216-258-00	METAL GLAZE	330K	5%	1/8W	
R710	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R711	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R712	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	
R713	1-216-097-00	METAL CHIP	100K	5%	1/10W	
R714	1-216-061-00	METAL CHIP	3.3K	5%	1/10W	
R715	1-216-073-00	METAL CHIP	10K	5%	1/10W	
R716	1-216-081-00	METAL CHIP	22K	5%	1/10W	
R717	1-216-049-00	METAL CHIP	1K	5%	1/10W	
		< VARIABLE RESISTOR >				
RV101	1-238-716-11	RES, ADJ, METAL GLAZE	100K			
RV103	1-238-716-11	RES, ADJ, METAL GLAZE	100K			
RV104	1-238-715-11	RES, ADJ, METAL GLAZE	47K			
RV106	1-238-715-11	RES, ADJ, METAL GLAZE	47K			
RV201	1-228-995-00	RES, ADJ, METAL	22K			
RV261	1-238-713-11	RES, ADJ, METAL GLAZE	10K			(IT)
RV301	1-228-996-00	RES, ADJ, METAL	47K			
RV302	1-228-996-00	RES, ADJ, METAL	47K			
RV303	1-228-996-00	RES, ADJ, METAL	47K			
RV305	1-230-498-11	RES, ADJ, CARBON	47K			(BRIGHT)
RV306	1-228-996-00	RES, ADJ, METAL	47K			
RV307	1-230-722-11	RES, ADJ, CARBON	22K			(COLOUR)
RV308	1-228-991-00	RES, ADJ, METAL	2.2K			
RV309	1-228-997-00	RES, ADJ, METAL	100K			
RV310	1-228-996-00	RES, ADJ, METAL	47K			
RV311	1-228-996-00	RES, ADJ, METAL	47K			
RV401	1-241-547-11	RES, VER, CARBON	10K			(VOLUME)
RV601	1-228-993-00	RES, ADJ, METAL	4.7K			
RV602	1-228-993-00	RES, ADJ, METAL	4.7K			
RV603	1-228-993-00	RES, ADJ, METAL	4.7K			
		< SWITCH >				
S101	1-554-061-00	SWITCH, SLIDE				(BAND)
S102	1-554-303-21	SWITCH, TACTILE				(CHANNEL -)
S103	1-554-303-21	SWITCH, TACTILE				(CHANNEL +)
S104	1-554-303-21	SWITCH, TACTILE				(CH CALL)
S105	1-571-277-31	SWITCH, SLIDE				(TV SIGNAL BOOSTER) (AEP, UK, E)
S601	1-554-061-00	SWITCH, SLIDE				(POWER)
		< SAW FILTER >				
SWF201	1-577-604-11	FILTER, SAW 38.9MHz				
		< TRANSFORMER >				
T301	1-459-949-11	COIL				
T601	1-450-287-11	TRANSFORMER, DC-DC CONVERTER				
T701	1-450-286-11	TRANSFORMER, DC-AC CONVERTER				

Ref.No.	Part No.	Description	Remark
		< TUNER >	
TU101	1-465-787-11	TUNER UNIT (UK, E, IT)	
TU101	1-465-787-21	TUNER UNIT (AEP)	
		< CRYSTAL >	
X301	1-567-504-81	OSCILLATOR, CRYSTAL	4.433619MHz

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MISCELLANEOUS

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ANT101	1-501-494-11	ANTENNA, TELESCOPIC	
FL701	1-519-563-11	INDICATOR TUBE, FLUORESCENT	
ND701	1-808-658-11	DISPLAY MODULE, LIQUID CRYSTAL	
SP401	1-544-548-11	SPEAKER (8CM)	

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ACCESSORIES & PACKING MATERIALS

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⚠	1-465-817-11	ADAPTOR, AC (AC-E702AE)	(AEP, E, IT)
	3-752-845-11	MANUAL, INSTRUCTION (ENGLISH, FRENCH, DUTCH, SPANISH)	(AEP, UK, E)
	3-752-845-51	MANUAL, INSTRUCTION (ITALIAN)	(IT)
	3-752-845-61	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN, ARABIC)	(AEP, UK, E)
*	4-030-767-01	CUSHION (UPPER)	(AEP, E, IT)
*	4-030-768-01	CUSHION (LOWER)	(AEP, E, IT)
*	4-032-930-01	INDIVIDUAL CARTON	(UK)
*	4-032-931-01	CUSHION (UPPER)	(UK)
*	4-032-932-01	CUSHION (LOWER)	(UK)
*	4-032-934-01	INDIVIDUAL CARTON	(AEP, E)
*	4-032-936-01	INDIVIDUAL CARTON	(IT)
	9-910-999-32	BAG, PROTECTION	

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HARDWARE LIST

#1	7-682-548-04	SCREW +B 3X8	
#2	7-685-646-79	SCREW +BVTP	3X8 TYPE2 N-S
#3	7-685-647-79	SCREW +BVTP	3X10 TYPE2 N-S
#4	7-685-649-79	SCREW +BVTP	3X14 TYPE2 N-S
#5	7-685-105-19	SCREW (2X8), + PTPWH	

MC-Service

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.